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# PNEUMOCONIOSIS OF COAL-MINERS*

BY

C. M. FLETCHER, M.D., F.R.C.P.

*Director, Pneumoconiosis Research Unit, Medical Research Council*

[WITH PHOTOGRAVURE PLATE]†

In South Wales during the past 15 years rather more than 17,000 men have been certified by the Silicosis Medical Boards to be suffering from silicosis or pneumoconiosis and have been suspended from their underground work. More than 10,000 of them have been certified in the past three years. There were two mines in South Wales which lost one in every three of their underground workers owing to these diseases in the one year 1945. These bare figures need no embellishment to reveal the seriousness of the problem presented to the mining industry or to convey the extent of human suffering occasioned by pneumoconiosis in this region. Elsewhere in Great Britain the problem is proportionately less serious, but even here the certification of nearly 3,000 men in 15 years presents a problem that is serious enough.

In 1943 a committee was set up by the Minister of Fuel and Power to consider the rehabilitation and treatment of miners in South Wales suffering from silicosis and pneumoconiosis. Among the recommendations of this committee (Ministry of Fuel and Power, 1944) was that more research into the problem was needed. The Medical Research Council was approached, and in 1945 it established in South Wales a Pneumoconiosis Research Unit to carry out investigations into every aspect of the problem of coal-miners' pneumoconiosis. Since then it has been my concern to organize and carry out research with a growing team of medical and other scientists in this Unit.

I propose, first, to consider briefly how the present disastrous situation has arisen in a century remarkable for the important advances in industrial health which have been achieved in almost every industry, then to discuss the former investigations of the Medical Research Council into the problem and the developments that have taken place since their publication. Finally, I shall describe some of the recent investigations undertaken by the Pneumoconiosis Research Unit and others in South Wales.

## History

The early history of coal-miners' pneumoconiosis is rather obscure. The pathology of the disease was described in this country over 100 years ago in Scottish coal-miners by Gregory (1831), Marshall (1834), and Thomson (1836), and the associated clinical descriptions of the breathlessness, which was called miners' asthma, and the black spit of such cases exactly match the clinical picture as we see it to-day. Greenhow's demonstration of the siliceous residues in the lungs of such cases in 1869 carried knowledge a step further, but thereafter the subject lapsed into obscurity, with a general consensus of opinion developing in the first two decades of this century that, owing to the improved conditions in the pits, the disease no longer existed among coal-miners (Oliver, 1908). This opinion was expressed by two successive Milroy lecturers. Thus Shufflebotham in 1914 said, "At the present time in Great Britain fibrosis of the lungs among miners can be said to be practically non-existent"; and in 1915 Collis said, "Miners' asthma, common though it used to be, has passed unobserved from our midst, and conjectures as to its character and causation are idle."

Whether these opinions were correct or not we cannot now be sure, but some doubt is thrown on them by a consideration of the Registrar-General's returns in the first four decennial supplements of this century. Unfortunately, we cannot go further back than this because of the unsatisfactory occupational classifications previously in use. However, for these four periods Mr. Oldham, our statistician, has calculated mortality rates (standardized on the population of all occupied and retired males in England and Wales, 1901) from all respiratory diseases other than tuberculosis and from pulmonary tuberculosis for coal-miners over and under the age of 55; for it is in the older coal-miners that deaths from pneumoconiosis are most likely to occur. These standardized rates are given in Table I, together with the rates from the same causes for all occupied and retired males. Coal-miners over 55 have throughout this period consistently shown a relatively high death rate from all respiratory diseases other than

TABLE I.—*Standardized Death Rates of Coal-miners and All Occupied and Retired Males in England and Wales, per 1,000*

| | | All Respiratory Diseases except Tuberculosis | | | | Pulmonary Tuberculosis | | | |
|---|---|---|---|---|---|---|---|---|---|
| Period: | | 1900–2 | 10–12 | 21–3 | 30–2 | 1900–2 | 10–12 | 21–3 | 30–2 |
| Over 55 | Coal-miners .. | 21·33 | 14·21 | 13·60 | 7·02 | 1·82 | 1·27 | 1·14 | 0·86 |
| | All occ. and ret. males, E. & W. | 14·24 | 9·91 | 8·96 | 5·16 | 2·17 | 1·85 | 1·26 | 1·04 |
| Under 55 | Coal-miners .. | 1·57 | 1·05 | 1·00 | 0·90 | 1·14 | 1·01 | 1·06 | 0·95 |
| | All occ. and ret. males, E. & W. | 1·93 | 1·14 | 1·00 | 0·76 | 2·64 | 1·96 | 1·50 | 1·24 |

*The first of the two Goulstonian Lectures delivered at the Royal College of Physicians of London on Jan. 13 and 15.

†The Photogravure Plate will appear in next week's issue, with Lecture II.

tuberculosis. Although Oliver's (1908) evidence of a diminishing incidence of pulmonary fibrosis among coal-miners towards the end of the last century is convincing, I suspect that considerable numbers of these deaths have always been due to dust diseases of the lung, and that the supposed disappearance of the disease was in part due to incorrect diagnoses.

The relatively low death rates of coal-miners from tuberculosis are also shown in Table I. It was perhaps this fact more than anything else which led to the widespread and persistent acceptance of the view that silicosis was rare among coal-miners; for the particular liability of the silicotic to die from tuberculosis had become established in this century, especially as a result of J. S. Haldane's important contributions to the subject. It was Haldane (1934) who defined silicosis as "a disease of the lungs brought about by the inhalation of siliceous dust and leading to tubercular infection of the lungs accompanied by a great development of fibrosis in them." From this definition the reverse conclusion was derived that when in any industry there was no excessive tuberculous mortality there was no silicosis. Haldane's (1923) declaration that "the inhalation of coal dust causes no danger to life but on the contrary gives even protection against the development of tuberculosis" was largely responsible for the fact that mining engineers made no attempt to reduce the concentrations of air-borne coal dust in the mines at a time when, owing to the introduction of mechanical methods of mining, these concentrations were in general becoming more intense. It must be admitted that medical men by their ill-informed complacency have a heavy load of responsibility to bear for the present high incidence of pneumoconiosis among coal-miners.

This period of complacency was closed chiefly by the increasing use of radiography in the diagnosis of chest disease. Cases of definite silicosis in coal-miners who had carried out drilling in rock were first reported in South Wales in 1926 by Tattersall. Soon after this, in South Wales, tuberculosis officers of the Welsh National Memorial Association (1931) and private radiologists, in particular Harper (1934) in Ammanford, began to observe radiological pictures similar to silicosis in coal-miners who would have been diagnosed clinically as cases of chronic bronchitis, and even in apparently healthy miners. In 1930 Cummins and Sladden in a classical paper published a detailed account of the pathology of such cases, showing that they had a kind of silicosis modified by what was regarded as an accumulation of coal dust due to lymphatic blockage by silicotic fibrosis.

The South Wales Miners' Federation had naturally been claiming compensation for men such as these for some years, but it was not until 1929 that a scheme of compensation was started. Initially, the scheme was confined to men who could prove that they had worked in silica rock, but in 1934 it was opened to all men working in coal. The rising number of certified cases in South Wales soon showed that pneumoconiosis was a serious problem, at least in the anthracite mines in this coalfield. At the same time, in Sweden (Edling, 1926), Germany (Boehme, 1925), Belgium (Langelez, 1938), France (Magnin, 1935), and also in Australia (Badham and Taylor, 1933) reports of silicosis among coal-miners were appearing. In America (Bloomfield *et al.*, 1935; Flinn *et al.*, 1941; Jones, 1942), and later in the Soviet Union (Moshkovsky, 1941), the disease was also shown to exist, chiefly among anthracite miners.

In England, however, uncertainty concerning the nature of the disease among coal-miners persisted. Haldane's (1935) view was that coal-miners developed bronchitis because of the excessive pulmonary ventilation occasioned by their strenuous work, and that consequently inhaled coal dust was not normally eliminated from their lungs and accumulated to cause a benign type of fibrosis which was not silicotic. Jones (1936) added the suggestion that bronchitis was especially common among anthracite miners because they become chilled after their day's work by being brought to the surface in special open cars or "spakes," whose use is almost entirely confined to this part of the coalfield.

## M.R.C. Inquiries—Medical Studies

It was against this background of increasing awareness of the prevalence of some form of pulmonary fibrosis among coal-miners that the Industrial Pulmonary Diseases Committee of the Medical Research Council undertook to investigate the problem in South Wales. These investigations began in 1937, and their results were published in three reports appearing in 1942, 1943, and 1945.

Between 1938 and 1940 Hart and Aslett carried out a radiological survey of working colliers at 16 pits distributed throughout the South Wales coalfield. Their main conclusions were:

First, that there was a serious incidence of radiological abnormalities among coal-face workers, similar to those seen in cases of silicosis, which must be attributed to the inhalation of coal dust. Although men exposed to the inhalation of rock dust were more prone to develop these abnormalities it was among the numerically predominant coal-getters that the greatest number of cases occurred. The part played by coal dust was further illustrated by confirming the presence of similar abnormalities in the lungs of coal-trimmers exposed to dense clouds of coal dust, but to no rock dust, in the bunkers of ships in South Wales ports, thus confirming the findings of Collis and Gilchrist (1928).

Secondly, that the incidence of the disease appeared to be related to the type of coal in which the men worked. They confirmed the evidence provided by figures of certification that hewers of anthracite in the western part of the coalfield were most seriously affected, that hewers of soft or bituminous coal were much less affected, and that hewers of steam coal with its intermediate rank showed an intermediate incidence. This observation gave rise to what may be called the "rank of coal" hypothesis, which relates incidence of pneumoconiosis to rank of coal. The "rank" of a coal is measured by the proportions of carbon and hydrogen in the coal substance. A high rank, or hard, coal has a high proportion of carbon (as in anthracite), while in softer coals the proportion of hydrogen increases and that of carbon diminishes. There were a few anthracite (high rank) pits which did not show a high incidence, but these exceptions were explained by the fact that they were shallow pits in which the coal was naturally damp and therefore less dusty.

Thirdly, they described an appearance in the abnormal radiographs of a "fine network, sometimes sharp and lacelike in pattern, but much more often blurred in appearance," which they called *reticulation*. This condition was clearly occupational in origin and might be associated with respiratory disability, but, not being nodular in appearance, did not conform to the criteria of silicosis required for compensation purposes. The Industrial Pulmonary Diseases Committee consequently recommended that for the purposes of compensation the radiological standard required for the diagnosis of "pneumoconiosis of coal-miners" should include reticulation. Subsequently an order was issued to this effect, and on and after July 1, 1943, the radiological condition of reticulation was made certifiable.

## "Reticulation"

I want at this point to make a few comments on the introduction of the term "reticulation," for some confusion has arisen from its use and from the description of its appearance as being that of a network. Hart and Aslett admitted in their full discussion of this question that a

reticular pattern, or an increase of linear lung markings, had been described by other observers (e.g., Steuart, 1923; Edling, 1926) in the early stages of silicosis which precede the formation of definite nodular shadows and which were considered by many of them to be non-specific changes that might be seen in cases without any dust exposure, particularly in patients with chronic bronchitis. Hart and Aslett considered that reticulation was distinct from the appearance of exaggerated lung markings in that it was a finer pattern and did not fade at the periphery of the lung fields. Confusion has, however, persisted. For instance, in France, where periodical *x*-ray examinations of all underground workers in coal-mines have recently been instituted, the term reticulation is used to describe non-specific changes (Croizier, 1947). In South Wales many men are referred by their doctors to the Silicosis Medical Boards with a radiological opinion that they have reticulation when their radiographs show only an increase in lung markings. Moreover, "reticulation" has come to be used, even in this country, to describe the earliest stages of classical silicosis (Hale, 1946) and other occupational lung diseases (Perry, 1947). Whatever may be the merits of the word "reticulation" to describe the characteristic pattern of early coal-miners' pneumoconiosis, there is no doubt that in practice its use may give rise to some misunderstanding.

Hart and Aslett were forced by circumstances to use a portable *x*-ray set for their radiography and were therefore unable to achieve a high degree of definition in their films. In the Pneumoconiosis Research Unit we have been fortunate in having a fine-focus rotating anode tube, and we have used ordinary films and high-definition screens. With this technique we find that the most characteristic and almost universal change in the disease is a fine mottling whose main components are usually less than 1 mm. in diameter but may reach twice that size. For this appearance we have, for the time being, used the term "pin-head mottling." In the earliest stages it appears alongside and between exaggerated lung markings, but later it may become so intense that it obscures the normal markings completely (Plate, Fig. 1). The appearance is similar to that described by Caplan (1947) in silicosis in the Kolar gold-mines. It is uncommon for this pin-head mottling to remain in a pure form. Frequently it is associated with a coarser mottling, through which it can still be distinguished, so that a film is often seen which appears nodular when viewed at a distance of a few feet but in which, on closer scrutiny, the nodules can be seen to be composed of aggregates of pin-head mottling (Fig. 2). These granular nodules may be distinguished from a more homogeneous type of nodule which we see particularly in cases resembling classical silicosis with a history of heavy exposure to rock dust or in cases where we suspect a complicating tuberculosis. The commonest type of film is one in which there is a mixture of pin-head mottling with rather coarser nodular shadows of irregular shape and size (Fig. 3). We are not inclined to use the word "network" to describe any of these appearances. We do not suggest that at present the term "reticulation" should be abandoned. It has proved useful in emphasizing the differences between the early stages of coal-miners' pneumoconiosis and those of classical silicosis, and it can only be supplanted by some better term as a result of wide agreement among workers in the field of pneumoconiosis. Moreover, it may be that, with further advances in radiographic technique, further modifications in terminology may become necessary.

Verbal descriptions of radiological appearances, however, will always be confusing. We think they should be forsaken and that in their place should be built up a national (perhaps ultimately international) collection of type films. These films, or good reproductions of them, should be made available to all medical men concerned with the study of pneumoconiosis. Any radiological appearance could then be described without risk of misunderstanding as being similar to a particular area of a given standard film.

A more serious practical difficulty than that of terminology arises from the fact that reticulation has to be considered as a definable condition for the purpose of decisions concerning compensation. It is obvious that the condition must in fact gradually develop from normality, but, unlike nodulation, in which it may be possible to define a minimum number and size of nodules for such purposes, reticulation cannot be assessed numerically, and it appears to develop only by a gradual increase in intensity. Hart and Aslett gave no guide to the degree of abnormality required for a confident diagnosis of reticulation to be made.

I have recently explored this question experimentally by presenting *x*-ray films showing various degrees of reticulation to a number of experienced observers, and have found remarkable differences in their opinions concerning the minimal degree of abnormality required to justify a diagnosis of reticulation.

This quantitative aspect of diagnosis is an artificial one resulting from the requirements of compensation legislation. The difficulty might be resolved by the use of standard films (taken, of course, with standard technique) for comparison with any film that is under consideration. I propose to repeat my experiment on diagnosis using such standards, in order to see what increase in consistency of opinion can be obtained with their assistance.

To return now to Hart and Aslett's conclusions: In the fourth place, they described a sequence of radiological abnormalities beginning with reticulation and proceeding through nodulation (consisting of localized or generalized multiple discrete shadows 2 to 5 mm. in diameter) to coalescent nodulation in which the nodular shadows begin to fuse, and on to the late stages of multiple fluffy shadows consisting of larger, less well-defined shadows than those of nodulation, and finally to large, well-defined, and dense massive shadows. From a consideration of the varying incidence of these abnormalities in men with increasing exposure to coal dust they postulated that with such continued exposure, at least in the mines with higher incidence, reticulation tended to develop into nodulation and thence by coalescence to fluffy and massive shadows. Consideration of the underlying pathology of these radiological appearances led to the conclusion that reticulation and the later more advanced abnormalities were "related in pathological development as well as being connected in time sequence." They carefully considered the part that tuberculosis might play, but concluded that it was so modified by pneumoconiosis that its presence could not be identified confidently in life and that it played an associated rather than a causative part. This view that a modified tuberculosis might play an adjuvant rather than an essential part in the development of massive fibrosis was similar to the views of Cummins (1936), Sen (1937), and Jones (1938) in South Wales. It differed slightly from the American view (Sokoloff, 1936; Bloomfield *et al.*, 1935; Gardner, 1940), by which tuberculosis appeared to be regarded as entering into and modifying the majority of the cases of advanced fibrosis. It was opposed to the view of Policard (Policard *et al.*, 1939), in France, who has always maintained that tuberculosis is the main cause of fibrosis in pneumoconiosis.

Lastly, finding no particular method of mining to which the high incidence of the disease might be attributed, Hart and Aslett emphasized the urgent need for suppression of all airborne dust in coal-mines.

### M.R.C. Studies of Pathology and Pathogenesis

In the same report there appeared an account by Belt and Ferris (1942) of the pathology underlying the *x*-ray changes described by Hart and Aslett. They were not able to add much to existing accounts of the disease

(Cummins and Sladden, 1930; Gough, 1940), but they laid emphasis on a basic pathological change underlying the radiological reticulation which they described as a diffuse network of reticulin fibrosis enmeshing, without redundancy, the deposits of coal dust in the lungs. To this condition they gave the name "dust reticulation." After ashing, dust reticulation left a highly siliceous residue. It provided a constant background, as does radiological reticulation, to the more advanced collagenous fibrosis corresponding to radiological appearances ranging from nodulation to massive shadows. Belt and Ferris suggested that the dust reticulation was due solely to the presence of silica in the coal dust, but that the development, in certain cases only, of collagenous fibrosis was due to the sporadic influence of an additional factor. This factor was not identified, but it was suggested that it might often, though not necessarily always, be the tubercle bacillus. This suggestion was based on the histological similarity between many of the fibrotic lesions in which tubercle bacilli could be identified and others in which they were not to be found but might none the less have been present at an earlier stage in the development of the lesion.

The pathogenesis of the disease was investigated along three main lines in addition to that of morbid histology.

A. By studies of air-borne dust underground in the mines at which radiological surveys had been carried out (Medical Research Council, 1943). It was shown that there was a relationship between disease incidence and the concentration both of the total dust and of its ash (or non-coal) component. It was not possible to distinguish between the quantitative and qualitative effects of the various dusts, but in their summary of the findings the Industrial Pulmonary Diseases Committee concluded that "the dust in anthracite mines is more dangerous than in the bituminous mines," thus supporting, but not explaining, the rank-of-coal hypothesis.

B. By chemical and mineralogical studies of the residues obtained by incineration of lung specimens an attempt was made by King and Nagelschmidt (1945) to see whether the degree or type of fibrosis could be correlated with any particular component of the dust in the lungs. In the lungs of men who had worked predominantly in rock and who had developed the classical type of silicotic nodulation there was a significantly greater amount of quartz and mica than in lungs showing the other types of fibrosis, but amongst the latter group, while there was rather more quartz and mica in the more advanced cases of fibrosis, the difference from the earlier cases was not statistically significant. No correlation was found between the amount of fibrosis and the amount of coal, which led to the conclusion that coal itself was not fibrogenic.

C. By the intratracheal inoculation of rats with suspensions of various air-borne dusts and of dusts obtained by the grinding of certain rock strata encountered in the South Wales coal-measures Belt and King (1945) showed that dusts containing high proportions of quartz and mica were the most fibrogenic. Air-borne dusts in general gave little fibrosis. The most fibrogenic air-borne dust was, curiously enough, derived from a low-incidence bituminous mine.

On the other hand, Campbell (1944) exposed mice to the inhalation of anthracite and bituminous dust and found that a greater increase of reticular tissue was produced in the lungs with the former than with the latter dust.

The state of knowledge concerning coal-miners' pneumoconiosis as it was left after the publication of the Medical Research Council's Reports may be very briefly summarized as follows: There was now no doubt that pulmonary disease attributable to the inhalation of coal dust was a serious problem among the coal-miners of South Wales; that the frequency of its occurrence appeared to be related to the rank of coal, being higher in the higher-rank coal-mines, but whether this was due to quantitative or qualitative differences in the air-borne dust clouds could not be decided; and, lastly, that both silica and some unspecified agent, possibly tuberculosis, were chiefly responsible for the development of fibrosis.

On the scientific aspect of the problem, the chief developments after the completion of the Medical Research Council's earlier investigation were in the field of pathology, which I shall discuss later.

In the field of practical affairs, two developments need consideration: dust suppression, and an increase in the incidence of certified disease.

## Dust Suppression

After the passing of the Coal Mines Act in 1911 the use of some device to prevent the escape of rock dust into the air during drilling became obligatory, but no attempts were made to suppress coal dust. In 1938 the Royal Commission for Safety in Coal Mines discussed suppression of coal dust only as a means of reducing the danger from explosions. Research into the problem was, however, advised, and the British Coalowners' Research Associations and the Safety in Mines Research Board began to investigate the problem. In South Wales, as the results of the Medical Research Council's investigations came to be known, serious attention began to be paid to the prevention and suppression of coal dust underground, both by the Mines Inspectorate, the Monmouthshire and South Wales Coal Owners' Association, and by the Amalgamated Anthracite Company, who set up their own Silicosis Research Committee.

The result has been the development of various methods of dust suppression, of which the most important are the following.

1. *Improvements in Ventilation.*—This has been of importance particularly in anthracite mines, where, owing to the methods of working the coal in common use, and owing to the rather haphazard development of the mines from shallow surface workings, poor ventilation was formerly one of the main reasons for the high dust concentrations in this part of the coalfield.

2. *Water Infusion.*—By this method water is introduced under pressure into the coal seam in advance of the working face, so that the coal is already damp when it is cut. It is a most effective method, but is not free from technical difficulties, particularly if the water leaks out from the coal seam into the adjacent strata, which it may soften and thus cause difficulties in the control of the roof.

3. *Wet Cutting.*—The mechanical cutting of coal has since its introduction been one of the most prolific sources of dust. A chain of picks is carried by a jib into the coal seam and undercuts or overcuts it, so that the coal is more easily won. The cutting of coal produces a mass of finely ground coal, much of which subsequently becomes air-borne, particularly when it is shovelled on to a conveyor. The introduction of water or foam with the picks damps the finely ground coal and largely prevents it from becoming air-borne, while percolation of the water into the coal adjacent to the cut and the dampness of the floor reduces much of the dust caused by working the overhanging coal.

4. *Water Sprays.*—Where water infusion or wet cutting is impracticable, water sprays are used to wet the coal-face before the coal is pulled down and the loose coal before it is loaded or before it is transferred from one conveyor to another or from a conveyor into trams. They have also recently been applied to pneumatic picks, which are another important source of dust.

The magnitude of the task achieved in the field of dust suppression in South Wales is shown by Table II, which gives the position of dust suppression in November, 1947. In South Wales half of all the coal-faces were treated with some means of dust suppression, and this is claimed to represent nearly all the places at which dust concentrations rise above the

TABLE II.—*Extent of Dust Suppression in Coal-mines in Great Britain in November, 1947*

| | South Wales | | Rest of Gt. Britain | |
|---|---|---|---|---|
| | Miles | % of Total | Miles | % of Total |
| Total length of coal-faces worked .. | 80·51 | 100 | 306 | 100 |
| Total length of faces with dust suppression in operation | 42·6 | 53 | 12·5 | 4 |
| Length machine-cut wet .. .. | 14·6 | 18 | 8·6 | 2·7 |
| Length water-infused .. .. | 17·3 | 21·5 | 0·2 | 0·1 |
| Length treated with hand-sprays .. | 10·7 | 13·5 | 3·7 | 1·2 |

provisional standards of safety that have been adopted. It will be seen that dust suppression in the rest of England is still in its infancy. Dust Prevention Committees have recently been set up in every division of the British coalfields, and the fruit of their labours should soon become apparent.

In this field, however, it is the doctor's role not to ask over how many miles of coal-face measures of dust prevention are officially being applied; he must ask, rather, how far dust levels are in fact being reduced. There is good evidence that in many places dust levels have been reduced to as little as 10% of their former high level, although all too often this degree of success has not been achieved (Monmouthshire and South Wales Coal Owners' Association, 1945). Whether this reduction is sufficient to remove the risk of pneumoconiosis is not yet established; nor can it be until, in the course of years, it can be shown that new cases are no longer arising.

A further role for the doctor as a human biologist is to insist that dust-suppression measures should not only be mechanically and physically effective but that the men who have to operate them should find them convenient and acceptable in use, and that they should by a policy of education come fully to appreciate their need. Sprays that are ill-adjusted may wet the men more than the coal and will be turned off. Excessive use of water in any method may cause unpleasant working conditions. Men are always unwilling to accept measures for their own safety that are inconvenient and require care and attention. Perhaps the most urgent needs to-day in the field of dust suppression are that more attention should be paid to the human factor, that in every piece of mining machinery automatic dust-suppression devices should be incorporated by the manufacturers, and that there should be *fully trained* dust-suppression officers in every pit.

There may always be certain mining methods in which the production of heavy dust clouds will be unavoidable—for instance, shot-firing. Under these circumstances it may be necessary for men to wear respirators. Unfortunately, no efficient respirator has yet been devised which men are willing to wear consistently. In the design of respirators filtration efficiency has been given priority over wearability, despite the obvious fact that an efficient mask in the pocket is of much less use than an inefficient mask on the face. In this field of investigation the biological approach is needed, giving first attention to the convenience of the man, if necessary at the expense of perfect filtration efficiency.

## Increase in Certification Rates

The second important development since the publication of the first reports of the Medical Research Council has been an increase in the incidence of certified disease, which, in point of time, followed the acceptance of the radiological condition of reticulation for purposes of compensation. Hart and Aslett considered the possible consequences of such a change in legislation, but concluded that a large increase in numbers of certified cases should not be anticipated, chiefly because respiratory disability, in the absence of which compensation is not granted, was infrequent in cases of reticulation except in the later age groups.

Unfortunately, this forecast was not correct, as may be seen in Chart I, which shows the number of men certified as totally or partially disabled in each year from 1931 to 1946. After the introduction of the Coal Miners' Pneumoconiosis Order in 1943, applications to the Board rapidly increased. At first the Medical Boards were overwhelmed in South Wales, and a large waiting-list was built up. More doctors were appointed in 1944, and the number of men certified rose to over 5,000 in 1945, to fall again in 1946. Provisional figures for 1947 show a further fall to just under 3,000. It is to be noted that certifications have continued to rise in the other coalfields of Great Britain, and provisional figures for 1947 show a further rise to just under 1,000.

The mean rate of certification since 1942 has risen to four or five times the rate in that year. There are no precise figures available to show what proportion of this increase was caused by the inclusion of cases of reticulation, but Dr. N. Keating and Dr. J. C. McVittie, of the Cardiff and Swansea Silicosis Boards, estimate that of the men certified since July, 1943, approximately 50% have been cases of reticulation that would previously have been rejected. Thus, since only half of the increase can be accounted for on this basis, there must have been a considerable increase in the number of applicants to the Board with more advanced disease than reticulation. It is important to consider why this increase has occurred.

There is no doubt that men with quite advanced pneumoconiosis can continue to work for many years underground. At first they may have no symptoms; later, with increasing symptoms, economic pressure and fear of unemployment may

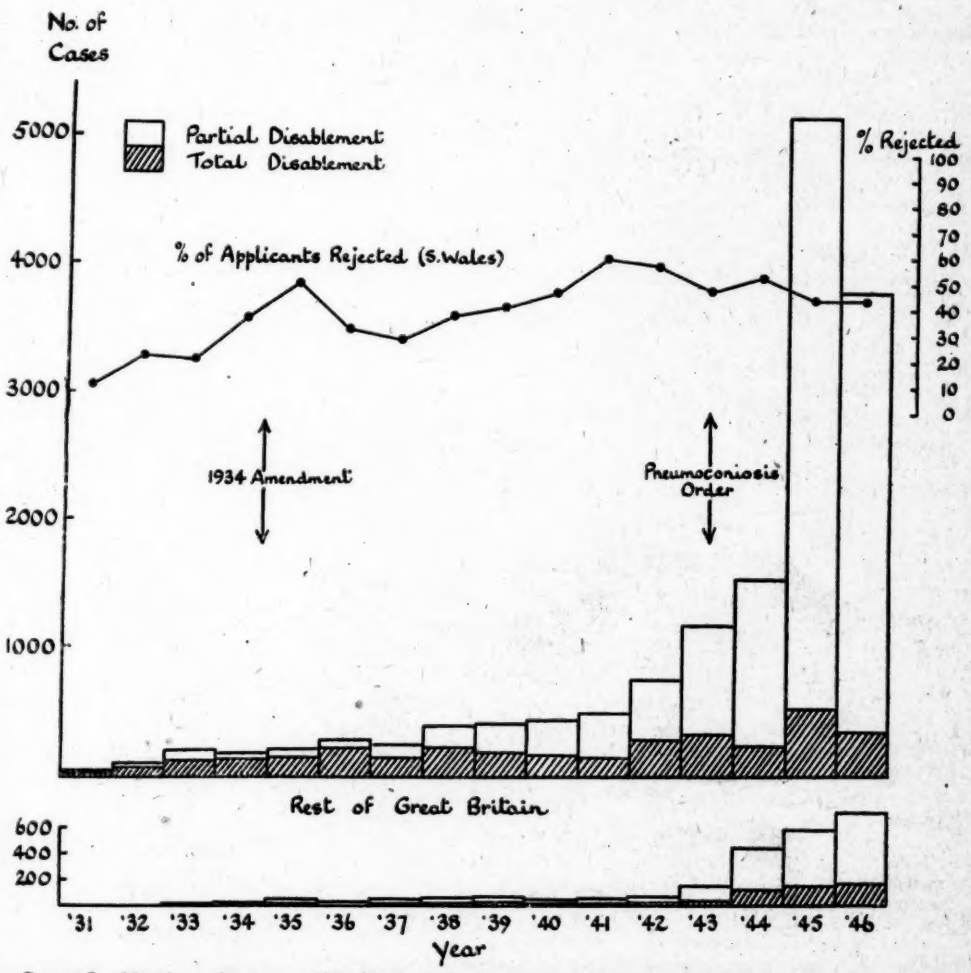



CHART I.—Number of men certified by the Silicosis Medical Boards as partially and totally disabled by pneumoconiosis and silicosis in each year from 1931 to 1946. Above: South Wales. Below: Rest of Great Britain. The population at risk is about six times greater in the rest of Great Britain than in South Wales. The percentage of applicants rejected by the Medical Boards in each year in South Wales is also shown.

keep them at work. Any influence which will lead men to apply with greater readiness to the Silicosis Boards will therefore give rise to an apparent increase in the incidence of all stages of the disease as judged by certification rates. Two such influences have recently been of importance, at least in South Wales.

The first has been the operation of the Essential Works Order, under whose provisions during and since the war men could leave coal-mining on medical grounds only. In South Wales before the war there was little alternative employment for a coal-miner, but by 1942 war industries were in full operation, so that there was actually a labour shortage. Wages were high in these factories and conditions good. If after a day's toil at the coal-face a man comes home tired and dirty to find that his daughter, fresh from a day of light bench work, has earned more money than he has, he may begin to think of following her example. Many men found an application to the Silicosis Medical Boards a means of escape from mining to easier and more remunerative work. The second influence, in South Wales at least, has been increasing awareness among miners of the risk of pneumoconiosis. Miners are well-educated men, and in many a workman's club library the Medical Research Council's Reports on Chronic Pulmonary Disease Among Coal-miners are well thumbed and well understood. In every mining village in South Wales patients certified as suffering from silicosis can be seen pausing for breath on the hills. In a recent study undertaken by the Social Survey (1947) to investigate the problem of recruitment to coal-mining 68% of mining men in South Wales gave danger to health and dustiness as the chief objection to mining, whereas in other mining areas this objection was not raised by more than 40% of those questioned. The weight of these influences is shown by the large number of unsuccessful applications to the Boards. It might have been expected that the adoption of reticulation as a basis for compensation would have resulted in an abrupt fall in the percentage of cases rejected. In fact, as may be seen in Chart I, no such fall occurred because of a rise in the number of applicants with insufficient disease for certification.

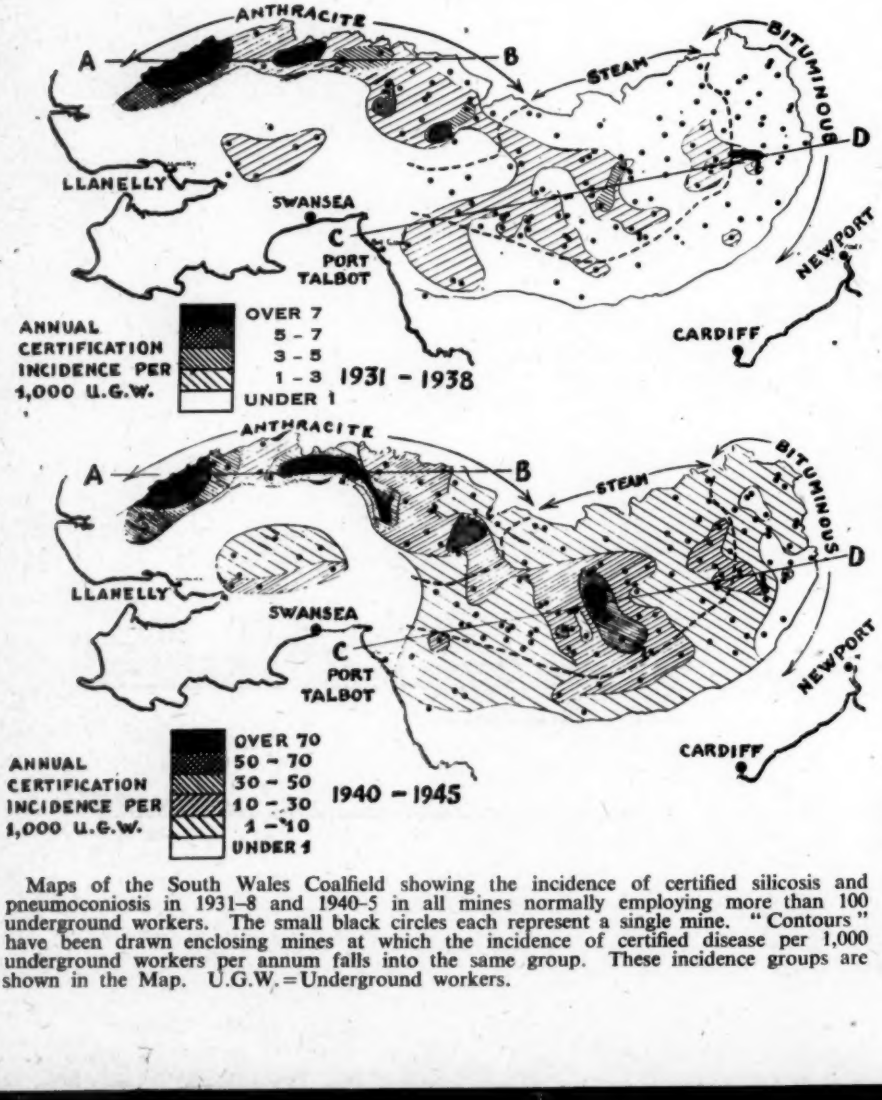
It also will be seen in Chart I that during the past five years there has been a slight but definite rise in the number of cases certified as totally disabled. These men have such severe symptoms that they would have applied to the Board regardless of any outside influence. This increase in numbers of advanced cases suggests that there has been a true increase in incidence recently.

Further evidence for such an increase may be derived from an analysis of the geographical distribution of certified cases which I have made with the help of my colleague, Mr. H. H. Watson, by calculating the annual certified incidence per 1,000 underground workers in all South Wales mines employing more than 100 men underground. These incidence rates were calculated for two periods, 1931–8 and 1940–5. The mines were then classified into groups showing, in the first period, annual rates per 1,000 of less than 1, 1–3, 3–5, 5–7, and over 7; and in the second period into groups showing annual rates per 1,000 of under 1, 1–10, 10–30, 30–50, 50–70, and over 70. When these rates are plotted on a map of the mines in the South Wales coalfield (see accompanying Maps) it is possible to draw "contour" lines enclosing those pits which fall within the same incidence groups. It is interesting to note that while pits with widely differing incidences may adjoin one another, areas of high incidence, in general, are surrounded in turn by areas of medium and low incidence. I cannot enter here into the complex factors which determine the disposition and shape of these contours, but will only state that the incidence of certifications is probably closely related to actual disease incidence. In the first period the groups of high-incidence mines in the anthracite area are clearly seen: there is a long irregular tongue of medium incidence extending into the steam-coal area, and there is another small but sharp peak of high incidence in the bituminous area. Elsewhere the annual rate is less than 1 per 1,000.

In the second period, in which the incidence levels at which contours have been drawn are ten times as great as those in the first period, the anthracite peaks remain, the bituminous peak is but a relatively low mound, but the striking change is the high peak that has developed in the steam-coal area, especially in the Rhondda Valley, which now rises to match the western heights. Only a small area in Monmouthshire has retained an annual incidence of less than 1 per 1,000.

The outstanding increase of incidence in East Glamorgan is brought out again in Table III, in which the pits have been grouped geographically into four main areas and the ratio between the average incidence in the two periods throughout these areas is shown. In the anthracite area, in West Glamorgan and in Monmouthshire, the average increase of incidence lies between sixfold and sevenfold. In East Glamorgan, however, the increase is nearly three times as great. A fallacy in these ratios might be caused by a disproportionate decrease in underground man-power in this area, but the percentage decreases in underground manpower (also shown in Table III) are similar in all the areas.

We must also consider the possibility that the high ratio in East Glamorgan might be due not to a real increase in incidence but rather to a later development of awareness of the disease in this area. In this case the disproportionate increase in certifications might be due to a flood of applicants whose disease originated in the earlier period but who had for some reason delayed applying to the Board until the later period. If this




Maps of the South Wales Coalfield showing the incidence of certified silicosis and pneumoconiosis in 1931–8 and 1940–5 in all mines normally employing more than 100 underground workers. The small black circles each represent a single mine. "Contours" have been drawn enclosing mines at which the incidence of certified disease per 1,000 underground workers per annum falls into the same group. These incidence groups are shown in the Map. U.G.W. = Underground workers.

TABLE III.—*Certification Rates in South Wales by Counties and Class of Coal, and in Rest of Great Britain, 1931–8 and 1940–5*

| | Certification Rate Per 1,000 U.G.W. | | Ratio of Rate 1940–5 / Rate 1931–8 | Ratio of U.G.W. 1931–8 / U.G.W. 1940–5 |
|---|---|---|---|---|
| | 1931–8 | 1940–5 | | |
| South Wales (Pits employing >100 U.G.) | | | | |
| Anthracite .. .. | 5·14 | 34·7 | 6·75 | 0·95 |
| Non-anthracite : | | | | |
| W. Glamorgan .. | 1·14 | 7·69 | 6·75 | 0·84 |
| E. Glamorgan .. | 1·00 | 18·27 | 18·27 | 0·85 |
| Monmouthshire .. | 0·82 | 5·18 | 6·32 | 0·87 |
| Rest of Great Britain (all pits) | 0·0535 | 0·467 | 8·72 | 0·90 |

Figures for South Wales derived from all mines normally employing more than 100 men underground. Figures for rest of Great Britain derived from all mines. U.G.W. = Underground workers.

were so we should find that the cases coming from the high-incidence steam-coal pits were older men than those coming from the other pits. Figures for the age distribution of certified cases are available for only ten pits in the anthracite area and six high-incidence pits in the East Glamorgan steam-coal area, but these should be representative figures, and it will be seen from Chart II, which shows the age distribution of certified

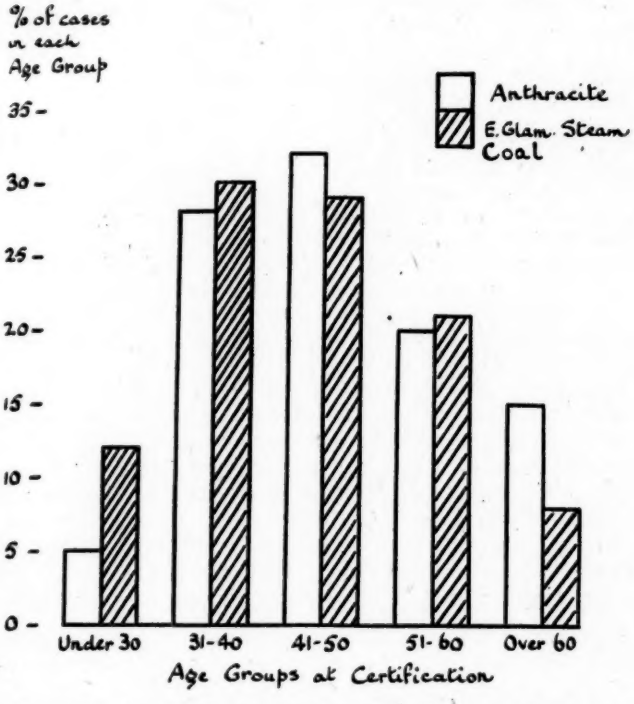



CHART II.—Age distribution of all cases certified with silicosis and pneumoconiosis between 1940 and 1947 at ten anthracite mines and six high-incidence steam-coal mines in East Glamorgan. The height of the vertical columns represents the percentages of all cases falling into 10-year age groups.

cases during the second period from these two areas, that on the whole the East Glamorgan cases are the younger men. This finding is inconsistent with delayed awareness of disease in this area and is consistent with a real increase in incidence.

To sum up, we may conclude from these certification figures that the change in legislation in 1943 and the tendency for men to seek employment outside coal-mining may account for the general increase in the certification rate during the past six years, but that some additional factor must have operated in the East Glamorgan steam-coal pits, especially in the Rhondda Valley, to produce a real increase in disease incidence.

What, then, may this factor have been? The rank-of-coal hypothesis would demand that dust concentrations must have been much higher in steam-coal pits than in anthracite pits in order to give as high an incidence. There must then have been some relatively recent rise in dust concentrations in the East Glamorgan steam-coal pits to account for the big increase in certified incidence there. It was in these pits that intensive mechanized mining was first adopted in South Wales, and there is general agreement among mining men that these methods gave rise to an enormous increase in dustiness. These mechanical methods of mining were mostly introduced in the early nineteen-thirties and would have been expected to produce a rise in certification rate beginning seven to ten years later, which in fact we find; for this is the minimum period necessary for the development of a certifiable degree of pneumoconiosis in most cases (Hart and Aslett, 1942).

Unfortunately, quantitative information concerning dust concentrations in South Wales pits before the institution of dust suppression is scanty. However, Briscoe *et al.* (1943) give figures for the mass concentration of air-borne dust in the pits at which colliers had been examined by Hart and Aslett (1942). Unfortunately, they did not include any high-incidence steam-coal pits. However, rather scanty figures are given for mass concentrations of air-borne dust at coal-faces in some of these pits before dust suppression in the 15th Report of the Coal Dust Research Committee of the Monmouthshire and South Wales Coal Owners' Association. In Chart III the annual certified incidence at various pits between 1940 and 1945 per 1,000 underground workers is plotted against the total mass concentrations of air-borne dust derived from these two sources. The figures

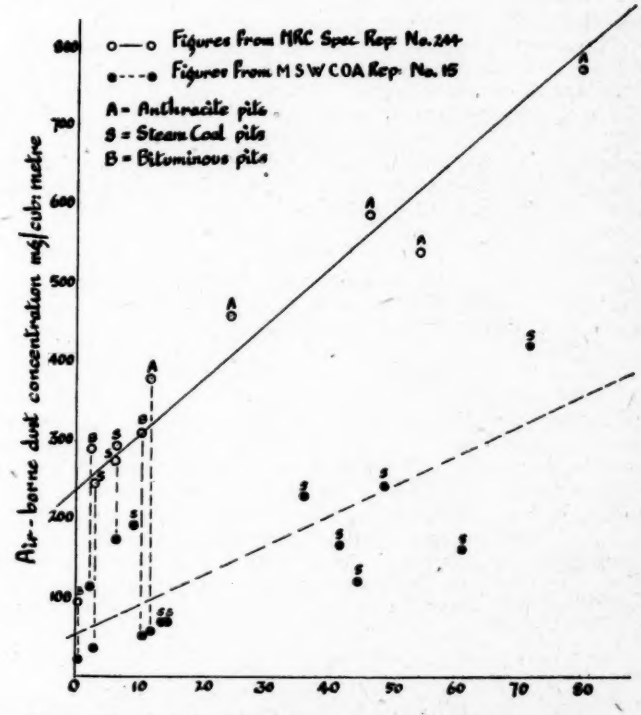



CHART III.—Relationship between annual certified incidence per 1,000 underground workers (horizontal axis) and air-borne dust concentrations expressed as mg./cu.m. (vertical axis) at seven South Wales coal-mines. Circles representing mines for which figures are available from both sources are joined by a dotted line.

for the pits surveyed by both investigators are joined by a dotted line in the chart. There is a fairly direct relationship between certified incidence and total mass concentration of dust, but there appears to be a systematic shift in the dust levels between the two sets of estimations which may be due to the difference in the methods of sampling employed. However, if allowance may be made for this shift by bringing the figures from the pits surveyed by both investigators to the same level, it appears that dust concentrations in anthracite and steam-coal pits of equivalent certified incidence were similar and not much greater in the steam-coal pits, as would have been demanded by the rank-of-coal hypothesis, upon which some doubt is thus thrown.

Too much weight must not be placed upon this rather unsatisfactory evidence, and it must be admitted that there are a few

figures recorded for dust concentrations under exceptional circumstances in steam-coal pits (for instance, at loading points) which are higher than any figures recorded by the Medical Research Council's investigators in anthracite pits. But it is fair to say that at present there is no good evidence that conflicts with the hypothesis that differences in the concentrations of air-borne dusts rather than differences in the constitution of the dusts chiefly account for the differing incidence of the disease among the coal-miners of South Wales.

This does not mean that qualitative differences in the dust clouds are of no importance. That they are important is indicated by Hart and Aslett's demonstration that rock workers have a greater tendency than colliers to develop radiological abnormalities. Since, however, there is in South Wales at least a hundredfold variation in the concentration of air-borne dust at the coal-face from mine to mine, while the variation in silica content, for instance, is less than tenfold, any effect of the qualitative differences in the dusts is concealed by the far greater quantitative differences.

I suggest, therefore, that the earlier development of a high incidence of pneumoconiosis in anthracite mines was due to high dust concentrations resulting mainly from poor ventilation, especially during the nineteen-twenties; and that its late development in steam-coal mines was due to high dust concentrations resulting from the introduction of intensive mechanical methods of mining in the dusty coal seams of East Glamorgan during the next decade.

This problem of the differing and changing incidence of the disease in South Wales pits is one to which we are devoting considerable attention in the Pneumoconiosis Research Unit. We have started a programme of radiological surveys at selected pits and we shall attempt to correlate our findings with the results of dust surveys. For this latter purpose it is essential that we should have some rapid and simple method of assessing dust concentrations. Hitherto all methods in common use either have been laborious or have involved the use of cumbersome equipment. Mr. H. H. Watson has devised a simple method (Watson and Hounam, 1948) by which air is drawn through a piece of filter-paper by a simple hand-pump and the resultant stain of coal dust is rapidly assessed by a photo-electric densitometer. Using this method, we have already carried out many surveys. Perhaps the most important preliminary result of these surveys has been the demonstration that there are tremendous variations in dust concentrations both from minute to minute and from day to day at the same face with unchanged working conditions. There is thus great difficulty both in giving representative single figures for air-borne dust concentrations and in assessing dust conditions by means of a brief visit from a mines inspector or a dust control officer. Some automatic method of continuous recording of dust concentrations is needed, and our physicists are now turning their attention to the development of such a method.

### Pneumoconiosis in England and Scotland

Finally, we must consider briefly the incidence of pneumoconiosis of coal-miners in Great Britain outside South Wales. The total number of certified cases in South Wales is approximately seven times the number in the rest of the country (see Chart I). Since there are nearly six times as many coal-miners in the rest of the country, the incidence of certified disease is nearly 40 times greater in South Wales. The important question is whether this difference in incidence is genuine or whether awareness of the disease has not yet spread to the whole country so that the rising figures of incidence for Great Britain as a whole forbode a disastrous situation arising there during the next few years as it has during the last few years in South Wales. Intensive mechanical methods of mining have been introduced to a greater extent in the rest of the country than in South Wales, and it is not unreasonable to fear that we may see these methods being followed by the same consequences as they have in East Glamorgan. I believe such a pessimistic forecast may be unjustified for three reasons:

1. In Table III it may be seen that the ratio of certified incidence in 1940–5 relative to that in 1931–8 for pits outside South Wales is much closer to the general ratio for South Wales than that for East Glamorgan, where there has been a recent large increase in incidence. This might be interpreted as suggesting that the rising figures outside South Wales are more likely attributable to social and economic factors than to a real increase in disease incidence. A further regional analysis of the ratio shows that its slightly higher value than that for South Wales excluding East Glamorgan is due chiefly to a high ratio in Scotland, Durham, and Denbigh, which may suggest a true recent increase in incidence in these areas.

2. During the past three years 14 mass miniature radiographic surveys have been carried out by local authorities at collieries in England. In these surveys the non-attendance rate has been high, averaging 50%, so that great caution must be used in deriving conclusions from their findings. So far as they go, however, they do not suggest a serious position, the incidence of all abnormalities described as suspected pneumoconiosis being only 1.7% of all employees examined. This compares favourably with Hart and Aslett's findings among coal-hewers in the lowest-incidence mines in South Wales.

3. There is the obvious fact that if overall mass concentration is the most important factor in the causation of the disease then no really dusty pit can be a low-incidence pit. The low incidence outside South Wales should therefore mean that there are no really dusty pits in the other coal-fields in Great Britain. Statements to the contrary, however, have been made (Graham and Jones, 1947), and we felt that we should investigate this point. With the help of the Mines Inspectorate we have been introduced to several reputedly dusty pits in North Staffordshire, Northumberland, and Cumberland which have a low incidence of certified disease. Mr. Watson has made estimations of the dustiness at coal-faces in these pits, and to our satisfaction he has found so far that the air-borne dust concentrations, although they may reach levels which we find in high-incidence pits in South Wales after dust suppression, do not reach the levels which existed under the former uncontrolled conditions. Our explorations as yet are only preliminary, but they do not lend support to the idea that many pits in Great Britain are sufficiently dusty to give rise to an incidence of pneumoconiosis such as has prevailed in the pits of South Wales.

It is with considerable hesitation that I suggest that there is no reason to fear the development of pneumoconiosis in Great Britain as a whole on a scale of severity such as that to which South Wales has been subject, for I am aware that doctors have in the past been guilty of disastrously mistaken complacency. However, we shall not remain content with this fragmentary evidence, and shall seek further sound information. Meanwhile the results of fuller inquiries may be awaited with reasoned confidence.

*[The second lecture, with a list of references, will appear in our next issue.]*

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Dr. Conrad Berens, of New York, was elected president of the Pan-American Association of Ophthalmology at the Third Pan-American Congress of Ophthalmology held in Havana, Cuba, Jan. 4–10. The next Congress will be held in Mexico City, 1952. The Congress adopted statutes and by-laws establishing the Pan-American Association of Ophthalmology as a continuing organization with the objects of fostering the progress of ophthalmology, establishing contacts among ophthalmologists of the Western Hemisphere, and promoting measures to conserve eyesight and prevent blindness among the peoples of the hemisphere. To achieve these aims permanent committees were established to deal with the following matters: research, glaucoma, trachoma, lighting and optics, contact-lens centres, orthoptics, prevention of blindness, neuro-ophthalmology, legal and industrial ophthalmology, standardization of ophthalmic hospitals and clinics, inter-American medical relationships, establishment and guidance of ophthalmological societies, and scientific cinematography. A board of censors was formed to supervise the relations of Association members to the lay press. According to the resolution adopted at Havana, local representatives of the Association's press relations committee must approve publication of articles in the lay press concerning any member.

# DEFICIENCY SCROTAL DERMATITIS IN P.O.W.s IN THE FAR EAST

BY

**A. W. FRANKLAND, M.A., B.M., B.Ch.**

*(From the Wright-Fleming Institute of Microbiology, St. Mary's Hospital, London)*

The condition here called deficiency scrotal dermatitis has not, so far as I am aware, yet received an adequate clinical description. Its prevalence among Allied prisoners of war in the Far East presented unrivalled opportunities for clinical observation, and it seems desirable to record a study of 551 cases. It is to be regretted that observations on the specific nature of the syndrome were precluded by the circumstances of the situation. Scrotitis is an ugly word, and "the urogenital syndrome," a term used by Mitra (1943), seems an inadequate description of many of the cases that were seen. For these reasons the term "deficiency scrotal dermatitis" has been adopted for the condition to be described.

Scrotal dermatitis first appeared among prisoners of war on Singapore Island in May, 1942, three months after their capture. During the six months from July 1 to Dec. 31, 1942, 1,371 cases were admitted to the skin ward at the main hospital for British personnel. Of these, 551 were primarily admitted for scrotal dermatitis. It should, however, be stated that many medical officers ran their own camp reception stations, so that not all cases were admitted to the main hospital. Pavillard (1946), writing of a camp in Singapore Town where 650 men remained for six months before going to Siam, states that "practically the whole camp suffered from scrotal dermatitis." This would not be an overstatement for most of the camps on Singapore Island.

After leaving the main camp at Changi in November, 1943, no cases of scrotal dermatitis occurred in any personnel under my care, though in Changi in 1944 there was a severe outbreak of new cases. Vegetables were difficult to get, and Clarke (1946) concluded that "scrotal dermatitis with its concurrent lesions was due to a deficiency of greens." Scrotal dermatitis was, however, still present in some prisoners of war on Singapore Island one month after their release (Mitchell and Black, 1946).

## Symptoms and Signs

The first symptom noticed was an irritation of the scrotum, always worse at night and often becoming so severe as to make sleep impossible. In the daytime men were often seen subconsciously scratching the affected part, but during work or if the patient got hot the irritation would become temporarily worse, and was unrelieved by scratching. In its mildest form the scrotal dermatitis would last for only a few days and then would relapse and last days or weeks. Heavy work, heat, and illness were the chief precipitating causes of the onset or a relapse. It is important to recognize the mild early stage because the condition is not simulated by a tinea or an eczema due to other causes. If untreated it developed in a number of different ways, making it possible to classify the more advanced cases. It should be understood, however, that the distinction between the different forms was not always clear.

*1. Mild Acute Dry.*—This form was present in almost all prisoners of war in Malaya six months after captivity. The front of the scrotum became red, with the medium raphe showing as a smooth white line dividing the slightly raised and thickened erythematous surface. This condition might persist for a few days or weeks. Finally, with or even without treatment, a fine desquamation would leave an apparently normal-looking scrotum. In the coloured races the erythema could not be recognized, though the stage of desquamation could easily be seen.

*2. Severe Chronic Dry.*—The front of the scrotum looked a bright red. Where the scrotal skin came in contact with the inner sides of the leg a few erythematous punctate areas appeared which later joined together to form a continuous blush. In more severe cases the skin round the anal margin and internatal cleft became red and painful, and fissures were often present. The under surface of the skin of the penis as it rested on the front of the scrotum commonly became red and irritable. The condition seemed to spread around the corona and on to the glans penis. In the uncircumcised, cracks appeared at the free margin of the prepuce, so that balanitis and phimosis often made circumcision necessary.

*3. Chronic Wet.*—This was the condition for which patients were admitted to hospital, though ambulatory treatment was of necessity often employed. The whole surface of the scrotum became wet and the inner sides of the legs were similarly involved. In the mild forms the scrotum might become dry again in a few days, in which case desquamation would occur, leaving a smooth shiny scrotal skin. If the moist state continued for over a week before the scrotum became dry a crepitant sensation, like egg-shells crackling under the skin, was observed. When the wet condition persisted the skin became macerated and fetid, and the cracks in the skin around the anus, cruro-scrotal junction, and preputial margin spread and became more painful. Without treatment the area of weeping and of infection increased until the condition developed to type 4.

*4. Ulcerated and Oedematous.*—The scrotum might now become as big as a football. Walking was almost impossible, as fluid and pus oozed from the fetid area. The scrotal skin was extremely painful from ulceration. In some cases flies had laid their eggs in the scrotal ulceration, and the maggots as they moved about caused an extremely painful contraction of the cremaster muscle. Serum exuding from the scrotum was thus an ideal culture medium for *Corynebacterium diphtheriae*. In the worst cases a spreading gangrene from the scrotum to the legs and lower abdominal wall, with marked generalized toxic symptoms with or without diphtheritic infection elsewhere, terminated in death.

## Associated Vitamin-deficiency Diseases

A detailed analysis of the other stigmata of vitamin-deficiency disorder occurring in patients with scrotal dermatitis was confiscated by the Japanese. It is, however, possible to give an approximate picture of the associated syndromes.

*Oral Lesions.*—The commonest lesions found associated with deficiency scrotal dermatitis were those of angular stomatitis, sore lips, and sore tongue. Stannus (1912) originally used the term "angular stomatitis" to describe a soreness at the commissures of the lips, with redness and desquamation along the line of closure. The angles of the lips became fissured and secondary infection was common. This condition must be distinguished from a cheilosis, which is an affection of the vermilion of the lips. The tongue lesions were so common that few subjects of established scrotal dermatitis had a normal tongue. In its mildest form the tip of the tongue only was involved. The tip looked tender, but only hot fluids and highly seasoned food actually caused pain. Later the whole surface of the tongue became either bright red or, more commonly, magenta-coloured. The thickened epithelium would flake off in patches, giving the so-called "geographical tongue." On the other hand, in a minority of cases the tongue was remarkably smooth and glazed in appearance. An infrequent finding was a bright redness of the soft palate and anterior pillars of the fauces. These cases had often been referred to the ear, nose, and throat department with the diagnosis of "pharyngitis." They were quickly cured by adequate doses of "marmite."

*Skin Lesions.*—Mild superficial desquamation on the naso-labial folds and on the skin adjacent to the pinna was a very common finding. A rather similar condition of the canthi, described by other observers, was very rarely seen. Some

patients who had been severely ill developed a fine dry scaling mosaic pattern of the skin of the body which did not quickly respond to any form of treatment. In some of the accounts of syndromes related to deficiency of the vitamin-B complex scrotal dermatitis, if mentioned at all, has been included in the term "pellagra." This is unfortunate, since the aetiology of the two diseases is not the same. Of the 551 cases under review only two had associated pellagroid skin changes. These consisted of a pigmentation and roughening in those areas of the skin most exposed to the sun. If thus exposed for any length of time the pigmented areas became painful and a patchy desquamation spread from the centre towards the periphery of the lesion. Five cases showed a follicular hyperkeratosis. This was most pronounced on the forearms just below the elbows and on the outside and back of the legs. The rough porcupine condition of the skin could be felt better than seen. It was cured by giving adequate doses of vitamin A in the form of red palm oil.

*Painful or Burning Feet.*—Cruickshank (1946), in a review of 500 cases of painful feet under his care while a prisoner of war, states that 30% suffered from scrotal dermatitis. Cases were admitted to the skin ward primarily for skin complaints only. Of the 551 patients under review six complained of painful feet. Nicotinic acid or its amide cured four and relieved the other two.

*Ocular Manifestations.*—These were of two types : the more common one, for lack of literature, was called granular cornea ; the other, retrobulbar neuritis. Granular cornea, retrobulbar neuritis, and scrotal dermatitis were in many cases present together, but the three diseases seem to bear little relation to one another with respect to date of onset and peak number of cases seen in any one month. In those suffering from granular cornea or keratitis the presenting symptoms were photophobia, itching and burning of the eyes, and a sensation of eye-strain. The eyelids were kept half shut, but beyond a general conjunctival injection, and without using slit-lamp investigation, no gross changes could be seen. If obvious corneal ulceration occurred the usual curative methods were found to heal extremely slowly. Permanent scarring did occur in some cases. The retrobulbar neuritis was in many cases more difficult to diagnose because the symptoms often arose without evidence of structural change. Although the maximal disability sometimes appeared suddenly, the symptoms generally took weeks or months to develop fully. Blurred vision or inability to recognize faces was the usual complaint. Sometimes patients suddenly found that they could not read, while others were unaware of any disability when a central scotoma was found on examination.

*Illustrative Case.*—A patient was admitted in November, 1942, complaining of a weeping scrotal dermatitis and blurred vision. At the end of a fortnight's treatment the scrotal condition had healed but the sight was becoming worse. One morning he failed to see his bed, walked into it and injured himself. Three months later, when vision had improved to counting fingers, there were still no abnormal disk changes.

Smith (1946) states that in the civilian internment camp, Hong Kong, where similar dietary conditions prevailed, of the 370 cases of retrobulbar neuropathy 143 (38.7%) had suffered from the orogenital syndrome. Ridley (1945) found that, although 48 out of 100 cases of amblyopia in former prisoners of war showed definite pathological pallor of the temporal halves of the disks, the appearance of the disks was sometimes normal even in severe and prolonged cases. Similar findings were noted a year before release in 46 patients who complained of blurred vision. Only one of these showed marked optic atrophy in both eyes ; 16 showed slight temporal pallor in one or both eyes ; and in the remainder the fundi appeared normal. Night-blindness was never complained of, though it is said to have occurred in other camps in the Far East. It was found that men with eye symptoms asked to go on the unpopular night working parties if there was a chance of getting off the following day's work in the glaring sun, probably because of the associated photophobia or a more rare mydriasis.

*Nerve Manifestations.*—Patients suffering from painful feet, retrobulbar neuritis, peripheral neuritis, or nerve-deafness were admitted to the skin ward for scrotal dermatitis if the latter disease was considered the more serious one. No case admitted primarily for scrotal dermatitis developed symptoms of a pyramidal-tract disorder with signs of spastic paraplegia, although in an account of this syndrome by Graves (1947) two of the four fatal cases showed evidence of scrotal dermatitis.

## Differential Diagnosis

So far as is known no other disease simulates the mild form of deficiency scrotal dermatitis already described, though by the time the condition becomes chronic, or more severe, it is possible that it will not be recognized as a deficiency disorder. Chemical dermatitis was produced in some of our mild cases by the application of various medicaments, particularly a paste the base of which was an antimalarial ointment containing citronella. Eventually its use had to be prohibited. Dhobie itch, prickly heat, and intertrigo are commonly seen in hot countries, especially under Service conditions. Tinea cruris (dhobie itch) can usually be recognized by the sharply defined growing margin of the ringworm on the legs.

Many of the cases that had begun as a deficiency scrotal dermatitis developed a superadded ringworm infection, and this was in fact presumed to have occurred in cases refractory to the usually effective treatment. Prickly heat rarely affects the crutch only, and an intertrigo, when it occurs in that part, is not quickly cured by adequate amounts of vitamin B. Eczema of the perianal margin is not infrequently seen in any dermatological clinic. This condition tends to start around the perianal margins and not to spread there from the scrotum. Furthermore, the skin later may become lichenified—a condition which apparently did not occur with true deficiency scrotal dermatitis. A seborrhoeic or exogenous dermatitis involving the scrotum might well be mistaken for the type of scrotal dermatitis seen among prisoners of war, especially as there were other seborrhoea-like lesions on the body.

As already mentioned, as soon as the scrotal condition became moist, secondary infection with *C. diphtheriae* was apt to occur. A routine culture in all cases when this was possible showed that some patients with weeping scrotal dermatitis were chronic diphtheritic carriers. More commonly, however, the clinical condition resembled cutaneous diphtheria elsewhere, except that once infected the scrotal skin was liable to become extremely thickened from oedema. This oedema differed from the gross oedema seen in some of the cases of oedematous beriberi in that the skin was weeping and ulcerated to start with and the oedema followed. In a few cases of oedematous beriberi the skin ruptured and became infected later. In some cases the scrotal condition had not reached the weeping stage, but the men reported sick with a sore mouth and a white diphtheritic membrane spreading over and completely occluding the red lips. These men generally had a diphtheritic angular stomatitis and cheilosis, and a redness or crusting or frankly diphtheritic membrane inside the nose—a sign that always had to be looked for, because there was rarely any complaint about the nose.

## Treatment

*Curative ; Specific.*—It was soon found that marmite or "vegemite" given in 1-oz. (28-g.) doses daily for eight days cured mild cases of scrotal dermatitis. In the mild dry erythematous type the scrotal irritation had usually disappeared completely by the second night. A fine desquamation would follow, and then, if the condition had been present for some time, the scrotal skin lost its rugae and became smooth in appearance. A longer period of treatment was necessary for the more severe cases, some of the patients having to remain in hospital for over two months. This chronic state could not be accounted for by infection. With the low vitamin-B content of the diet relapses were apt to occur.

*Non-specific.*—Local treatment was limited to the availability of any drugs or dressings. Many men, by keeping themselves well washed and dusted with powder, were able to postpone the onset of the weeping condition. Calamine lotion when available had much the same effect as a dusting powder. In its dry or early moist stage scrotal dermatitis could be prevented from becoming worse, and in some cases was almost cured, simply by resting and keeping cool. This, of course, was often impossible. When the weeping variety had become established the ideal treatment was rest in bed—again impossible to obtain. Of the many local applications tried wet dressings of normal saline were probably the most effective, and had the added advantage that when all other drugs had been finished salt and water were always available, though the former was used at the expense of the already low salt ration in the diet. Hypertonic saline was used, but was found to be too painful, and it had no advantage over normal saline. Very dilute solutions of eusol, boric acid, mercury perchloride, mercury biniodide, lead lotion, silver nitrate, and mercurochrome were also used. A dilute solution of eusol was perhaps the best local application, but some patients became eusol-sensitive after using this form of treatment for a number of days. When the local condition had healed completely patients were allowed out of bed and only a dusting powder was applied; but relapses were liable to occur if the wet dressing was not kept on for the requisite time, which varied from two to three days to as long as two months.

*Prophylactic.*—Attempts to supplement the meagre diet with sources of the vitamin B complex were not very successful. Yeast brews apparently had no effect on scrotal dermatitis, and rice polishings in doses of 1 oz. (28 g.) a day made no appreciable difference. Extracts of macerated green leaves or grass, if in a concentrated form, were effective prophylactically and therapeutically in some cases.

## Discussion

Stannus (1944) believes that the endothelium of the capillary system is the first tissue to suffer in a riboflavin deficiency, resulting in a loss of tone and dilatation. Normal cellular metabolism is upset and the tissue functions are disturbed—what he terms a "capillary dysergia." He considers that the skin lesions of an ariboflavinosis occur where the skin is thin or highly specialized and at the mucocutaneous junctions of body orifices. He does not seem to have stressed that the lips, nares, prepuce, anus, scrotum, etc., are particularly liable to constant mild trauma. In scrotal dermatitis it may well be that there is the added factor of mild trauma in association with excess heat. It is known that warmth and exercise of the body may produce urticaria or eczema of the skin in a sensitive allergic patient. It has been suggested that when cellular nutrition is interfered with in these patients, although the various mechanisms are not fully understood, there is a release of histamine or H-substance into the tissue space. Arguing on a similar basis, it may be possible that, in a riboflavin deficiency, with the interference of cellular metabolism there is a production of histamine or H-substance. If this is so, here is an explanation of the similarity between the skin disorders of an eczematoid type seen in allergic conditions and some of the skin changes seen in hyporiboflavinosis, especially those round the mucocutaneous junctions of the body orifices.

In many written reports of the signs of vitamin-B deficiency scrotal dermatitis was not mentioned, though it may well be that it was not always looked for. Many observers had, however, noticed its appearance. Stannus (1912, 1913) described its occurrence. Purcell (1942), in reporting six cases of nutritional glossitis, noticed four cases of itchy or scaling scrotal skins. These were not benefited by 100 mg. of nicotinic acid, but cleared up on 5 mg. of riboflavin daily. Landor (1939) had previously noted ten cases with similar results. Sydenstricker (1941), writing on the B-group avitaminosis, remarks that pruritus of the vulva or scrotum may be present. Sebrell and Butler (1938) maintained a group of patients on a diet poor in riboflavin content. In their experiment the first sign of vitamin lack to appear was one of cheilosis. They then described the various other manifestations generally attributed to a riboflavin deficiency. They state that only rarely was there a dry brown itching dermatitis of the hands and scrotum. As they had already mentioned that a generalized extensive seborrhoeic dermatitis might be a manifestation of riboflavin deficiency, the scrotal condition was not particularly stressed. Fitzgerald Moore (1937), who was interested in the eye changes in vitamin-B deficiency, remarked that, among other symptoms, there were associated active signs or a past history of a scaly itchy scrotum.

Mitra, writing on what he termed the orogenital syndrome in avitaminosis, noticed, as have other observers, that nicotinic acid may make the condition worse, while on riboflavin all cases were cured or showed much improvement. It is interesting that Thomson (1944), in a description of beriberi among naval ratings in Malaya, described two cases of eczema of the scrotum without demonstrable signs of any other deficiency. Landor in 1939 described eczema of the scrotum and stomatitis occurring in Singapore Gaol which was not cured by nicotinic acid but responded to yeast or marmite. Owing to lack of literature it was quite a time before some of the doctors in the prison camp who had been working in Malaya before the war recognized scrotal dermatitis as a disease with which they were already familiar in the local gaols.

## Scrotal Dermatitis as a Manifestation of Riboflavin Deficiency

It may be argued that the foregoing account of scrotal dermatitis adds little to our knowledge of a vitamin-deficiency disease or even that it does not prove the disease described to be due to vitamin lack. It has already been explained that the circumstances of the situation precluded a scientific study of the specific nature of scrotal dermatitis. All that has been attempted is a description of an almost universal complaint suffered by prisoners of war while living under conditions in which diseases due to vitamin-B deficiency were certain to occur. It is only by recording other workers' observations on scrotal dermatitis that an assessment can be made of the aetiology of the disease.

Purcell, Landor, Sebrell and Butler, and Mitra have all produced evidence that scrotal dermatitis occurs in patients on a low riboflavin diet and that the condition can be cured by riboflavin. Burgess (1946) has shown from the detailed analysis of the diet at Changi camp that scrotal dermatitis occurred inversely with the riboflavin intake, though, at Hong Kong, Smith's graph of the riboflavin content of the diet and the incidence of new cases of the orogenital syndrome show no very close correlation.

It was unfortunate that pure riboflavin was not available at the camp, and that of the three preparations which were effective for the cure of scrotal dermatitis the riboflavin content of one of them—namely, green-leaf extract—was unknown. However, the following figures supplied by the makers represent the range of riboflavin content for marmite and vegemite. Marmite contains 0.055 to 0.067 mg. per g. and vegemite 0.045 to 0.06 mg. per g., or a probable minimal value of 1.5 mg. per oz. Williams and others (1943) suggest that 0.5 mg. per 1,000 calories is an adequate intake of riboflavin, so it is not unreasonable to suppose that the quantity of riboflavin contained in 1 oz. of marmite or vegemite would, together with the riboflavin

of the diet, be adequate to produce signs of cure in a case of riboflavin deficiency. It must be remembered that riboflavin, nicotinic acid, pyridoxin, pantothenic acid, choline, and folic acid are some of the known factors present in any extract such as marmite which, together or alone, may be responsible for any observed therapeutic effects.


### Summary

Scrotal dermatitis was a common complaint among prisoners of war in Malaya six months after captivity. It was noted that no cases of scrotal dermatitis occurred when the riboflavin content of the diet was maintained at a sufficiently high level.

A description of the different types of deficiency scrotal dermatitis seen is given, together with the associated vitamin-deficiency diseases.

Previous workers who have described the complaint have suggested that it is due to a deficiency of the riboflavin content of the diet. The curative effect of marmite (or vegemite) was found to be specific in mild uncomplicated cases.


I wish to thank Dr. John Freeman and Dr. H. Scarborough for their advice and encouragement.

*Addendum.* Since writing the above description of deficiency scrotal dermatitis this condition has also been commented on by Sefton, L. (*Brit. J. Derm. Syph.*, 1947, **59**, 85).

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# STREPTOMYCIN IN BUBONIC PLAGUE


BY

**Ch. HADDAD, M.D., D.T.M.**

AND

**A. VALERO, M.B., Ch.B.**

*(From the Department of Health, Palestine)*


In 1947 bubonic plague broke out suddenly in Haifa and later spread to Affula, a village 30 km. to the south-east. The outbreak was suppressed quickly by the extensive use of D.D.T., but it gave us the opportunity of observing the effect of streptomycin in three severe cases. As little experience has been gained in the use of this antibiotic against plague (Herbert, 1947; Karamchandi and Rao, 1948) a brief report on our observations may be justified in spite of the small number of cases presented.

The outbreak started explosively. The first case, the only fatal one, was admitted to hospital on June 23, 1947. Within the next 13 days 13 more cases, all from Haifa, were admitted, and there were 3 from Affula on July 19.

Sulphonamides, especially sulphadiazine, which is now considered the most potent sulpha compound against plague (Platzer, 1946; Huangl and Chu, 1946), were administered as a routine to all cases. Where possible the initial dose was 2 g., given orally, followed by 1 g. every four hours during the acute stage. Later, smaller quantities were given until the bubo healed. Results were favourable on the whole, but the condition of three patients, admitted when very seriously ill, deteriorated rapidly in spite of treatment. It was decided, therefore, to administer streptomycin. The results in all three cases were remarkably good.

## Case Records

*Case 1.*—A male Arab aged 20 was admitted to hospital in July, 1947, with the history that three days previously he had had a severe rigor, a rise of temperature up to 39° C., and an intense headache. On the following day, on discovering a painful lymphadenitis in the right groin, his physician placed him on 400,000 units of penicillin daily. In spite of this his condition deteriorated and severe continuous vomiting started. The day before admission he became delirious.

On admission his pulse was 124, respirations 26, and temperature 40° C.; he was delirious and was vomiting. His face was haggard, the conjunctivae injected, the tongue dry and heavily coated. In the right inguinal region there was a tender solitary lymph gland the size of an almond, but the skin over it was not inflamed. Bubo puncture fluid was positive for *Pasteurella pestis.*

The patient was given a course of "soludagenan" (soluble sulphapyridine) 1 g. intravenously every four hours. Nothing could be given by mouth on account of the vomiting, therefore glucose and normal saline were also administered intravenously.

On the same evening his general condition deteriorated and streptomycin 200 mg. was administered every three hours. The following morning the temperature dropped to 38° C. and in the evening it was normal. The patient, though still vomiting occasionally, was so much better that he was able to sit up in bed. Streptomycin was therefore discontinued on July 9. As the temperature rose 24 hours later, a further 2 g. was given. From this stage recovery was uneventful. The bubo resolved and the patient was discharged on July 16.

*Case 2.*—A male Arab 8½ years old became ill on June 28, 1947, with a sudden and severe rigor, fever, vomiting, and headache. On June 29 he developed a painful swelling in the left groin, for which he received 1 g. of sulphathiazole thrice daily for 6 days. As there was no clinical improvement he was referred to hospital.

On admission on July 4 his temperature was 39.5° C. and pulse 130; his face was congested, the eyes were bloodshot, and breathing was rapid and shallow. He was conscious but apathetic, and vomited repeatedly. The left inguinal glands were enlarged, tender, and inflamed. Bubo puncture fluid was found positive on direct smear and culture. Sulphadiazine 4 g. daily was prescribed.

The day after admission his condition became worse. The pulse was thready and vomiting continued, and he was incontinent of urine. On July 6 his condition deteriorated further; his temperature was 40° C. and delirium had set in. Streptomycin 200 mg. every three hours was therefore started at 8 a.m. By 4 p.m. the same day the temperature had fallen to 37.5° C. and the vomiting had ceased. Improvement was maintained during the next three days, during which the patient fed and took an interest in his surroundings. On July 10 his temperature rose again to 38° C. and an intermittent fever was maintained until July 14, when fluctuations became evident in the bubo, which was then incised. After that recovery was uneventful and the patient was discharged on July 26. Streptomycin had been discontinued on July 17.

*Case 3.*—A male Jew aged 35 was admitted to hospital on July 19, 1947, on the fourth day of his illness, which had started with a rigor followed by fever and vomiting. A painful swelling appeared in the left groin on the second day of the disease. The patient had been given sulphathiazole and penicillin for two days without effect.

On admission his temperature was 39.5° C., pulse 120, and respirations 24. The patient looked very ill. His face was congested, his tongue was heavily coated, and he complained of a very severe headache. In the left inguinal region there was a large hard swelling which was inflamed and tender. *P. pestis* was cultured from the bubo puncture. The patient was given sodium sulphathiazole 1 g. every four hours intravenously.

Two days after admission his condition grew worse: consciousness was clouded, the pulse 130, and respirations rapid and shallow. The bubo was larger, and inflammatory oedema extended from the middle of the thigh to the umbilicus. He was given 300 mg. of streptomycin every three hours, but 24 hours later his condition was still serious. Although his temperature had dropped to 38° C. his pulse became thready, his finger-tips bluish, and he was dyspnoeic. On July 23 there was a marked general improvement. The patient felt much better, his pulse rate was 92, he was no longer dyspnoeic, and he was on the way to recovery. Streptomycin was continued until July 27. The bubo was still painful, but the abdominal oedema had subsided. On August 16 fluctuations became evident and a thick purulent discharge was evacuated. The final healing of the wound was delayed until Sept. 9, but the patient felt very well until his discharge.


### Summary

Streptomycin treatment of three very severe cases of plague not responding to sulphonamides resulted in speedy recovery. A fourth severe case was not treated with streptomycin, and the patient died on the eighth day of his illness.

Whereas the effect of streptomycin on the general condition of the patients was remarkably good, the buboes appeared to be uninfluenced if treated late. This was true also in respect of the sulphonamides, and in most cases incision and drainage were necessary to bring about resolution.



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# SOLITARY MYELOMA OF THE MANDIBLE


BY

**RICHARD SPITZER, D.M.D.**

AND

**L. WOODHOUSE PRICE, M.A., M.D.**

*Pathologist to the West End Hospital for Nervous Diseases*


The myeloma, or plasmacytoma, is a tumour of plasma cells which usually produces multiple lesions, causing a systemic affection of the body. As distinct from generalized myelomatosis of bone, the solitary myeloma is not uncommon in the nasopharynx and in single bones such as a vertebra or clavicle. Very few references, however, can be found on lesions of the jaw affected by the solitary type of myeloma.

William Tennent (1945) in a survey of 49 cases does not mention a single tumour of the mandible. No reference to the mandible as a site of myeloma is found in Beattie and Dickson's *Textbook of Pathology*. Because of the paucity of information existing in the literature concerning the solitary myeloma of the mandible the following case is recorded.

### Case History

A man aged 39 was referred to one of us (R.S.) because of persistent swelling and great pain in the left side of the mandible. He gave a history of pain persisting for three weeks, at first localized in one of the left lower bicuspids and accompanied in the later stages by a slight swelling of the cheek. The tooth was first treated conservatively, but as no relief was obtained it was eventually extracted. The wound failed to heal and pain persisted, with discharge of pus from the socket. A little later the pain assumed a constant and dull character with attacks radiating to the ear and temporal region. These symptoms were accompanied by general malaise.

Inspection of the lower jaw revealed an oedematous inflamed mucous membrane extending from the canine to the molar region on the left side. Pus was draining freely from the wide-open socket of the extracted bicuspid tooth. The wound edges were lacerated and undermined, and the base was covered with greyish granulations. There was some swelling of the buccal aspect of the mandible, but the lower border was palpable and no fluctuation was present. The process had involved the regional lymph nodes, causing hard and tender nodules, paresis of the left side of the lower lip, and slight trismus.

A lesion measuring 11 mm. in diameter was present in the region of the previously extracted bicuspid tooth. This was of osteolytic character without sharp definition and with little trabeculation. There was no evidence of the presence of root fragments or sequestra. On the strength of the clinical picture and the radiological appearance (Figs. 1 and 2) a tentative diagnosis of osteomyelitis was made and surgical exposure advised.

FIG. 1

FIG. 2

At operation a large mass of soft granulations of maroon colour which bled freely on manipulation was found in the affected area, extending into and invading the mental foramen and the mandibular canal. It was thus found that encroachment upon the cortex and marrow of the bone of the mandible was far greater than had been suspected from the clinical picture. After thorough curetting of the bone cavity a specimen was taken for histological examination. The biopsy showed a true myeloma. No Bence-Jones proteins were found in the urine. A blood count showed : red cells, 5,000,000 per c.mm. ; haemoglobin 88% ; oxyhaemoglobin 12.1 g. ; white cells, 6,500 per c.mm.

*Histology of Tissue from Mandible.*—The histology was that of a plasmacytoma, or true myeloma of bone marrow (Fig. 3).

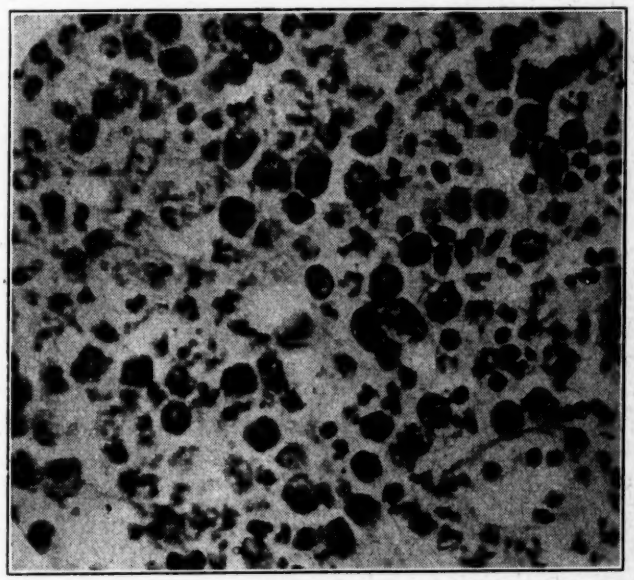

FIG. 3

The material received consisted partly of necrotic bone, the cancellous spaces of which contained collagen fibres, fibroblasts, lymphocytes, and polymorphonuclear leucocytes. There was thus evidence of chronic osteomyelitis associated with tumour formation. Critical examination of the plasma cells which constituted the neoplasm revealed the presence of mitotic figures and of hyperchromatic nuclei in moderate numbers. The identity

of the plasma cells was confirmed by staining with Unna and Pappenheim's methyl-green and pyronine. It is to be noted that this tumour bears no relationship to the myeloid epulis or osteoclastoma.

The diagnosis of solitary myeloma having been established, the patient was referred for *x*-ray therapy to Dr. Phillip Flood, to whom we are indebted for co-operation with this treatment and for furnishing notes on the clinical progress of the case.

### Conclusion

The myeloma is a true malignant neoplasm, which in this case proved responsible for the pain which had at first been attributed to simple toothache. Several theories have been advanced regarding the aetiology of these tumours. Trauma and chronic osteitis may have an influence on the malignant transformation of cells of the bone marrow. In the present case the histology reveals that an osteitic process can be traced in the tumour region. Such a deviation from the normal may have contributed to the formation of the growth. A thorough radiological examination did not reveal any metastatic tumours. The treatment of choice for plasmacytomata in this region is surgical removal followed by *x*-ray therapy (Gootnick, 1945).


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## SIGNIFICANCE OF THE GRAM TEST FOR BACTERIA IN RELATION TO PENICILLIN BACTERIOSTASIS


BY

**MARIAM GEORGE, B.Sc., B.T.**

AND

**K. M. PANDALAI, M.Sc., Ph.D., A.R.I.C.**

*(From the Department of Biochemistry, Indian Institute of Science, Bangalore)*


We have already shown that nucleic acids possess the property of antagonizing the inhibitory action of penicillin on susceptible pathogens and that they can also reverse such actions (Pandalai and George, 1947a, 1947b). Further, nucleic acids restored original characteristics to bacterial cells which had undergone changes in morphology and Gram-staining reaction due to contact with penicillin. We also demonstrated that nucleic acids failed to have any of these effects on Gram-negative bacteria, such as *Bacterium coli*, normally insensitive to penicillin, but which, however, were inhibited by higher concentrations (George and Pandalai, 1947).

It is now known that some other antibiotics are Gram-sensitive. It has also been demonstrated (Henry and Stacey, 1943, 1946) that the staining quality characteristic of the Gram-positive organism is associated with the presence of magnesium ribonucleate within the organism, and that this substance prepared from commercial sources was capable of restoring the Gram-positive quality to bacteria from which it had been removed by 2% bile salt in normal saline.

We have studied the influence of added magnesium ribonucleate on the growth of Gram-negative organisms kept in contact with penicillin. It might be expected that in the presence of added magnesium ribonucleate the Gram-negative organisms which are ordinarily insensitive to penicillin would in their life processes be more in agreement with the sensitive organisms, and consequently would be inhibited by lower concentrations of the drug. It was actually found that magnesium ribonucleate stood to the Gram-negative organisms in just the same relation that nucleic acid stood to the Gram-positive organisms, in that it antagonized the inhibitory action of penicillin and also allowed the organisms to grow from a non-viable condition produced by contact with penicillin. The results are given in Tables I and II.

TABLE I.—*Showing the Influence of Magnesium Ribonucleate on the Penicillin Inhibition of Bact. coli*

| Penicillin Alone (Units per ml.) | Magnesium Ribonucleate Alone | Magnesium Ribonucleate and Penicillin | Broth Control |
|---|---|---|---|
| 12·0 + | 1/2,500 +++ | 1/2,500 12·0 ++; 15·0 ++; 17·5 ++ | |
| 15·0 − | 1/5,000 +++ | 1/5,000 12·0 ++; 15·0 ++; 17·5 + | +++ |
| 17·5 − | 1/10,000 +++ | 1/10,000 12·0 ++; 15·0 +; 17·5 + | |

− indicates complete inhibition; + indicates growth; ++ fairly good growth; +++ very good growth.

TABLE II.—*Showing the Reversibility of Penicillin Action on Bact. coli produced by added Magnesium Ribonucleate*

| Penicillin (Units per ml.) | Magnesium Ribonucleate Added | | | Broth Control |
|---|---|---|---|---|
| | After 3 Hours | After 6 Hours | After 24 Hours | |
| 12·0 + | ++ | ++ | ++ | |
| 15·0 − | ++ | ++ | ++ | |
| 17·5 − | ++ | ++ | ++ | +++ |
| 20·0 − | ++ | ++ | ++ | |

The magnesium ribonucleate used was a neutral solution of the magnesium salt of pure yeast nucleic acid, and *Bact. coli* was the test organism. The results show, however, that the addition of magnesium ribonucleate to *Bact. coli* cultures does not help the organisms to become susceptible to lower concentrations of penicillin. This means that magnesium ribonucleate alone cannot convert the Gram-negative organism into a Gram-positive one, at any rate from the point of view of susceptibility to penicillin action. Even granting that magnesium ribonucleate has some far-reaching effects on an organism (Stacey, 1947) in its relation to the Gram test, it cannot be said to possess any special influence on the specificity of the inhibitory action of penicillin, as the susceptibility of certain organisms, such as *Streptococcus faecalis*, the gonococci, and the meningococci, will still remain unexplained.

That the magnesium ions, quite apart from the ribonucleate moiety, in the magnesium ribonucleate exert a pronounced influence on the growth of *Bact. coli* in contact with penicillin is seen from the results given in Table III.

TABLE III.—*Showing the Influence of Magnesium Ions on the Growth of Bact. coli in the Presence and Absence of Penicillin*

| Penicillin Alone (Units per ml.) | Mg ++ Added as $MgSO_4$ Solution Alone | $MgSO_4$ and Penicillin | Broth Control |
|---|---|---|---|
| 6·0 ++ | | 0·1%: 6 ++; 8 ± | |
| 8·0 ++ | 0·1% +++ | 0·1%: 10 −; 12 − | |
| 10·0 ++ | | 0·1%: 15 − | |
| 12·0 + | | 0·2%: 6 ++; 8 ± | +++ |
| 15·0 − | 0·2% +++ | 0·2%: 10 −; 12 − | |
| 17·5 − | | 0·2%: 15 − | |

The minimum inhibiting concentration of penicillin for *Bact. coli* diminishes to about 50% of its original value when magnesium ions are present in the culture treated with penicillin. It is interesting to note that exactly the same type of results was obtained with a strain of *Shigella dysenteriae*. It would thus seem that magnesium ions have the interesting property of converting normally insensitive organisms to a state more closely resembling that of the sensitive pathogens, probably by altering their metabolic reaction pathways. It is thus obvious that there is need for further work to assess the actual significance of (1) the Gram reaction in its relation to sensitivity or otherwise of the respective pathogens to penicillin, and (2) the assumption (Haslett, 1947) that the ability to produce penicillinase may be tied up with the absence of magnesium ribonucleate from penicillin-resistant organisms. Work on these aspects is in progress.

We gratefully acknowledge our indebtedness to Prof. V. Subrahmanyan and Major K. P. Menon for their interest and helpful criticisms, and to the Council of Scientific and Industrial Research, under whose auspices this work is being carried out.

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# LUGOL'S SOLUTION IN FAILING LACTATION

BY

**DAVID P. NICHOLSON, M.D., M.R.C.P.**
*Registrar, Paediatric Unit, County Hospital, Farnborough, Kent*

The capacity for satisfactory lactation shown by individual women depends on the quantity of breast tissue available and its degree of differentiation. It is unlikely that hormone therapy can significantly alter the quantity of tissue available, but it may influence a poor breast temporarily to secrete more milk. Dried thyroid gland may increase the rate of milk production since it raises the basal metabolic rate, and there is experimental evidence that this increase in milk output may amount to as much as 20–30% of the daily output. This effect is only temporary, and ceases when the hormone is omitted (Engel, 1947; Folley, 1947).

Partial or total failure of breast-feeding is common. Robinson (1943, 1947a, 1947b, 1947c) has described the results of hormone therapy in women whose lactation is judged likely to fail. As a result of this work it was concluded that dried thyroid gland caused a greater increase in milk yield than any other hormone. In view of this finding Lugol's solution of iodine was tried, and was found to be even more successful. It is difficult to explain why this should be so, for it is known that thyroid extracts and iodine have opposite effects upon the abnormal B.M.R.

Robinson (1943) test-weighed the infant on the fifth day, and if the milk output was less than 10 oz. (284 ml.) it was considered likely that lactation might fail. In a consecutive series of 99 such instances where lactation was judged to be failing test-weighing was done daily until discharge and again at the fourth week. Of these women 72 were treated as controls and the remaining 27 were given six drops of Lugol's solution in milk twice a day. (Lugol's solution: 5% iodine in 10% aqueous potassium iodide.) This treatment was started on the sixth day and continued until discharge or until the output reached 16 oz. (454 ml.). Lugol's solution appeared to increase the milk output.

This work has been repeated in the present series using exactly the same indication of failure to establish lactation and the same dose of Lugol's solution. Test-weighing was done on the fifth day, and if the output was less than 10 oz. the case was admitted to the experimental series. Alternate cases were used as controls or given Lugol's solution as indicated. Unfortunately, routine test-weighing proved impossible after discharge, which was usually on the twelfth day after delivery. Concurrently all infants in hospital were test-weighed on the fifth and tenth days to provide an indication of normality. One serious difficulty was encountered in making the work strictly comparable, since in this maternity unit the technique of Waller (1937, 1947) is used both to encourage lactation and to avoid congestion. This involves antenatal and postnatal expression of the colostrum and milk and the administration of moderate doses of stilboestrol in the early phase of congestion. However, it was decided to use the milk output, as measured by test-weighing, as the indication of failure to establish lactation, but to record the total output (test-weigh and expressed milk) in the results. By this means it has been possible to estimate the effect of the iodine solution on total milk output whilst adhering to the criteria of Robinson; furthermore, in this way it is possible to ignore the sucking power of the infant.

Part of Waller's technique is to give stilboestrol early in breast congestion. Since it was considered possible that this might affect lactation adversely patients who had received stilboestrol were excluded from the trial series. Nevertheless test-weighing was done, and the results are recorded in the Table. In this particular group there were

*Results of Tests*

| Group | No. | 5th Day Output Bulk (oz.) | 5th Day Mean (oz.) | 10th Day Output Bulk (oz.) | 10th Day Mean (oz.) |
|---|---|---|---|---|---|
| Normal at 5th day .. | 151 | 2,330 (66·2 l.) | 15·4 (436 ml.) | 3,019 (85·77 l.) | 19·9 (565 ml.) |
| Normal at 5th day. Stilboestrol given | 11 | 190 (5·4 l.) | 17·2 (490 ml.) | 221 (6·28 l.) | 20·0 (568 ml.) |
| Failed at 5th day. Stilboestrol given | 43 | 238 (6·76 l.) | 5·5 (156 ml.) | 653 (18·5 l.) | 15·2 (432 ml.) |
| Failed at 5th day. Controls | 24 | 199 (5·65 l.) | 8·3 (235 ml.) | 362 (10·28 l.) | 15·0 (425 ml.) |
| Failed at 5th day. Iodine given | 19 | 167 (4·74 l.) | 8·5 (240 ml.) | 262 (7·44 l.) | 13·7 (390 ml.) |

54 cases. On the fifth day eleven had an output over 10 oz. and 43 an output less than 10 oz. This second group of possible failures who had received stilboestrol were not given Lugol's solution. The results in these two groups appear to indicate that stilboestrol does not adversely affect lactation itself, and since it diminishes engorgement and the tendency to abscess formation it seems reasonable to continue using it in moderate dosage, provided that it has no harmful effects on the female reproductive system as a whole.

It will be seen from the above results that Lugol's solution appeared to have no influence upon lactation, at least not a beneficial one. This is at variance with the findings of Robinson and would seem to nullify her conclusions that iodine increased the milk output and that failing lactation depended upon a deficiency of iodine intake. On the other hand, so far as these figures go it can be seen that stilboestrol given in the first few days of lactation has no permanent deleterious effect upon the milk output. It was considered unnecessary to append the statistical material from this work, since it did not clarify the results.

**Summary**

Forty-three cases of failure to establish lactation were studied, and Lugol's solution was given to alternate cases. This did not appear to affect the milk yield.

Stilboestrol did not seem to affect lactation adversely.

My thanks are due to Mr. Rufus Thomas and Dr. Duncan Leys, in whose unit this work was done; to the nursing staff, who bore the great increase in labour entailed; and to Dr. F. H. Hackwood, superintendent, for his permission to publish.

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# Medical Memoranda

## Gonorrhoea: A Plea for Diagnosis before Treatment

Even to the most impartial of medical men the plaint of genital discharge by a patient is apt at once to suggest gonorrhoea. That such a high index of suspicion should obtain is in its way commendable, but not quite so praiseworthy is the procedure sometimes adopted. These comments have been prompted by the tendency to administer sulphonamides and even penicillin to cases of urethritis and the like without first attempting to ascertain the cause of the discharge. The assumption that genital discharge is more or less synonymous with venereal disease is not confined to the uninformed and uncharitable layman. Too often the clinician, led astray by a history of coitus followed by genital discharge, takes for granted that the case is one of gonorrhoea. The next false step, prompted no doubt by a desire to cure the patient as quickly as possible, is to prescribe immediately what amounts to specific treatment without first obtaining bacteriological confirmation. Gonorrhoea is by no means the only cause of irritation of the lower genito-urinary tract.

But there are other aspects to be kept in mind—such as the effects of a wrong diagnosis on the state of mind of the individual and on the health of the community. Furthermore, gonorrhoea is capable of causing social repercussions, and it may lead doctor and patient alike into the witness-box. A categorical diagnosis of gonorrhoea, even if correct, is to most patients unwelcome; but a presumptive one, based merely on clinical impression to the neglect of modern diagnostic procedures, is quite unjustifiable, and amounts to professional negligence. A non-committal answer to the patient's question—a reply that the condition "may be gonorrhoea" and that it is "safest to treat as if it were"—may lead to gonophobia and may entail endless trouble before the unfortunate victim is rid of what are perhaps unnecessary fears.

### Indiscriminate Drug Treatment

The epidemiological control of infectious genital diseases is becoming an important aspect of modern medicine, but proof or at least sufficiently reliable evidence of an infection in the individual is necessary before measures may be taken to trace and deal with the source of infection. The rapidity with which a few tablets of a sulphonamide or one injection of penicillin may efface all proof of gonorrhoea stultifies any belated attempts to establish a correct diagnosis on bacteriological grounds. Thus a source of infection continues to spread disease still further afield. The hasty and indiscriminate treatment of genital discharge with these drugs shows a complete lack of appreciation of the doctor's duty not only to the patient but to the community. Time and again the venereologist is requested to deal with a patient supposed to have gonorrhoea, only to find the task of arriving at a diagnosis impossible because of previous administration of one or other specific remedy.

The only proof of gonorrhoea is the demonstration of the gonococcus, and treatment should not be started until reasonably adequate measures have been taken to identify the organism. In these days of the rapid control of gonorrhoea with penicillin, when patients, particularly males, tend to seek advice early in their disease, the delay of a day or so while awaiting a laboratory report on a sample of pus is of little significance. In an acute urethritis, in males especially, treatment may be given almost immediately, provided a specimen of discharge is procured first; if the lesion is gonococcal it is almost certain that gonococci will be found. Greater caution is necessary in the case of females, or in any patient in whom the development of gonorrhoea is likely to be followed by important social or medico-legal repercussions, but there can never be any excuse for what virtually amounts to treatment without diagnosis.

The following instances are quoted as illustrative of these remarks.

### An Illustrative Case

A married man was referred to hospital because of urethritis. The history revealed the following succession of events. Ten days previously he had extramarital coitus and four days later he had intercourse with his wife. Two days thereafter he developed an acute purulent urethritis, for which he consulted his doctor, who, without taking any steps to substantiate bacteriologically the diagnosis of "probable gonorrhoea," had prescribed sulphathiazole; and some 20 g. had been taken before the patient visited the clinic.

It was obvious that the situation was likely to prove difficult in several of the aspects which together determine the spread and control of infection. Clinically, it seemed likely that the condition had been gonococcal; but the sulphathiazole had done its work, and, though there was some residual discharge, it was impossible to prove gonorrhoea. The diagnosis was therefore in doubt. There were also two other problems—that of dealing with a possibly infected wife, and the examination of the other woman, who might still be spreading gonorrhoea. These two difficulties were temporarily shelved by the patient's refusal, because of negative findings, either to have his wife examined or to divulge the identity of the probable source of his infection. Six weeks later his wife developed a gonococcal salpingitis. He then disclosed the identity of his extramarital partner. Reference to the clinic register showed her to be a patient undergoing treatment for proved gonorrhoea who, subsequent to infecting the patient, had done the same to another man, who had brought her to the clinic for examination.

The sequence of incidents and the dates of their occurrence showed that, had a bacteriological examination been carried out in the married man in the first instance, it was highly probable that the development of salpingitis in his wife would have been averted, and that the infection of the other male would also have been prevented, particularly as the woman in question had been persuaded without any difficulty to come forward for examination.

### Other Examples

A married man arrived at the clinic distraught over the suggestion of his having acquired gonorrhoea. Accidental contagion is extremely rare in adults, and the only probable source of infection was his wife. The supposition of gonorrhoea seemed justified; he had a very acute purulent urethritis, but a smear and a culture showed it to be staphylococcal. His wife was interviewed, and gave a history of a chronic infection of one of her Bartholinian glands. Examination corroborated this, and pus obtained from the gland gave a pure growth of staphylococci. Both were successfully treated, but their mental relief meant far more to them than the cure of their symptoms.

The need for caution is shown in another case, also considered gonococcal. The condition was somewhat unusual—a chronic inflammation of the lower surface of the glans and the fraenum, with a meatitis and a mild mucoid discharge. Though seldom seen in a clinic for venereal diseases, the condition was fortunately recognized as diabetic.

In the presence of a genital discharge, gonorrhoea must certainly be proved or excluded. Two errors are to be avoided: (1) clinical evaluation on naked-eye appearance alone, and (2) to begin treatment without previous adequate bacteriological examination. The plea for care in arriving at a diagnosis of gonorrhoea is put forward in the interests of the patient, the doctor, and the community.

F. J. T. BOWIE, M.B., D.P.H.,
Chief Venereal Diseases Officer,
Aberdeen Public Health Service.

# Reviews

## RECENT MEDICINE

*Progress in Clinical Medicine.* By Various Authors. Edited by Raymond Daley, M.A., M.D., M.R.C.P., and Henry G. Miller, M.D., M.R.C.P., D.P.M. (Pp. 356; with 22 text-figures and 15 plates. 21s.) London: J. and A. Churchill. 1948.

If a symposium on progress in clinical medicine is to fulfil its purpose the writers should not only record all recent advances in diagnosis and treatment that have proved their worth in practice but should also assess these critically and endeavour to assign to them their rightful place in the pattern of medicine. They should indicate the territories on which research both in medicine and the basic clinical sciences is advancing, and they should give references to original papers which will reward those who wish to delve more deeply into a specific problem. The sincerest tribute which can be paid to *Progress in Clinical Medicine* is that its authors achieve all these objectives. The two editors and their ten associates are young and active physicians each of whom has had a wide experience in his special field, and this is reflected in their contributions, which present in a relatively small compass a comprehensive survey and a balanced appraisal of those advances in medicine which we have seen in the last decade or two.

The scope of the book is indicated by the following topics, selected from many : control of infections by antibiotics and the sulphonamides ; the sources and methods of infection ; immunization ; virus meningitis ; congenital defects and rubella ; modern developments in the treatment of gonorrhoea and syphilis ; chancroid and lymphogranuloma inguinale ; tropical diseases ; peptic ulcer of the oesophagus and paraoesophageal hernia ; the scope of gastroscopy ; hepatitis ; diabetes mellitus and spontaneous hypoglycaemia ; surgery in cardiovascular and pulmonary disease ; polyarteritis nodosa ; giant-cell arteritis ; Libman-Sacks syndrome ; classification of nephritis ; renal anoxia ; hypertension ; the Rh factor ; folic acid ; "B.C.G." ; sarcoidosis ; disk protrusions ; clinical application of the electroencephalograph ; exophthalmic ophthalmoplegia ; thiouracil ; psychosomatic medicine. These are a few of the newer subjects discussed, but there are also useful critical reviews of many old problems ; there is, for example, an admirable and sober essay on the present status of the rheumatic diseases.

This book will help the busy practitioner to keep abreast of general medicine ; it will enable the specialist to acquaint himself with advances in fields other than his own, and—this is likely to be its widest appeal—it will provide a supplement to the textbooks for candidates for higher degrees in medicine. It would be invidious, when each contribution is of so high a standard, to choose any for special praise ; but the next edition (which must soon be needed) will be improved if the synopsis of our knowledge of vitamins is replaced by a chapter more in keeping with the rest of the book. It now recalls a wall chart issued by one of the manufacturing houses.

HENRY COHEN.

## AMERICAN PIONEER

*The Selected Writings of Benjamin Rush.* Edited by Dagobert D. Runes. (Pp. 433. $5.00.) New York: Philosophical Library. 1947.

The name of Benjamin Rush (1745–1813) is one of the most highly honoured in the history of American medicine. He has been variously called, and not without good reason, "the American Sydenham" and "the greatest pioneer in American medicine." A graduate of Edinburgh University, where he received his M.D. degree in 1768, he studied also in London and Paris. Then he returned to Philadelphia, where he later became a successor in the Chair of Medicine to John Morgan, another Edinburgh student, who in 1765 had laid the foundations of medical teaching in America. Rush rendered valuable service during the yellow-fever epidemics which devastated Philadelphia towards the end of the eighteenth century, although his treatment consisted in copious bleeding and large doses of calomel and jalap. But he was not content to limit his activity to the profession of his choice. His achievements were as varied as they were numerous. He was an indefatigable student of the natural sciences, and his writings embrace agriculture, chemistry, education, theology, and politics. In the field of public welfare he was an active humanitarian. He protested against slavery, capital punishment, and alcoholism, and he pleaded for the more humane treatment of criminals and of the insane. As a patriot he was one of those who signed the Declaration of Independence.

It is obvious that the writings of such a man are worthy of attention, and the 29 essays now reprinted in book form must cater for every taste, grouped as they are under the headings "Good Government," "Education," "Natural and Medical Sciences," and "On Miscellaneous Things." The last chapter consists of a series of letters written during the outbreak of yellow fever in 1793, and they give a vivid picture of the epidemic, which was believed to have been caused by a putrefied cargo of coffee on one of the wharves. Rush himself was a victim, but recovered "owing to the speedy use of the new remedies." An account of his visit to France is contained in the essay "On Manners," in which he praises the politeness of the French, although he found the physicians of Paris "at least fifty years behind physicians in England and Scotland in knowledge." The return crossing from Calais to Dover took 23 hours. The essay "On Old Age" contains much sound wisdom and might well serve as a model for those who to-day expound "geriatrics" as a new science. Rush did not find that sedentary employment, loss of teeth, the use of tea and coffee, or baldness had any effect upon the duration of life. As aids to good health in old age he advises warmth of room and clothing, young company, and gentle exercise ; while in disease his favourite remedies are opium and bleeding.

There is an admirable lecture to medical students on "Duties of a Physician." "Never appear in a hurry," "Study simplicity in prescribing," "Be familiar with the common diseases," "Do not despise home-made remedies," are a few of the aphorisms of Benjamin Rush. There is an interesting series of three "Lectures on Animal Life" which recall John Hunter's method of thought. The essays on "The Bible as a School Book," and on "The Amusement and Punishment which are Proper for Schools" might be studied profitably by teachers to-day. The editor is to be congratulated on his selection and on his praiseworthy service in recalling the philosophy of Dr. Benjamin Rush.

DOUGLAS GUTHRIE.

## COMMUNICABLE DISEASES

*Communicable Diseases.* By Franklin H. Top, M.D., M.P.H., F.A.C.P., and Collaborators. Second edition. (Pp. 992; 95 text illustrations and 13 coloured plates. 42s.) London: Henry Kimpton. 1947.

The modern textbook, especially on a special subject, often smacks of the card-index system, and it is indeed a major task of the writer to assess critically and place in proportion all the different aspects which he discusses. When the first edition of this book appeared we commented on the pleasure it gave to read reviews of subjects every line of which revealed expert observation that had been carefully considered. In the second edition, greatly enlarged and amended, it continues to bear this hall-mark.

There are 14 new chapters, and they include up-to-date accounts of such diseases as coccidioidomycosis, epidemic diarrhoea of the newborn, infective hepatitis, and infectious mononucleosis. The first section of 170 pages is on general considerations, and we would pick out for special mention the chapters on home and hospital management written by nurses. They describe the most recent aseptic nursing techniques which reflect the best nursing practice. The discussion on serum reactions will seem rather extensive to British readers, for experience with refined antitoxins here has almost caused us to neglect such occurrences, but American workers have always emphasized them, and there is probably here an example of some national difference as yet unexplained. Perhaps because of recent experience the chapter on poliomyelitis proved to be particularly enjoyable. The Kenny method of management is given a fair, objective analysis. What is good is acknowledged, and the author concludes that "the acceptance of 'spasm' as an observable phenomenon is valid, 'alienation' is probably unnecessary, 'incoordination' does occur and 'muscle paralysis,' partial or total, is important."

We noted here and there a few weak points—for example, the laboratory diagnosis of smallpox is given little space and not emphasized sufficiently. Again, in a book whose illustrations are so excellent it is surprising to find that some of the *x*-ray reproductions are really bad and some might have been omitted with advantage. But these do little to detract from a volume of very high general excellence. Since the book is American it includes accounts of diseases of slight importance in Britain, but we can repeat the prophecy we made on the first edition—"This book will be greatly appreciated in this country by all who have to do with the management of infectious diseases."

T. ANDERSON.

## ORIGIN OF MAN

*Mankind So Far.* By William Howells. The American Museum of Natural History Science Series. (Pp. 319; illustrated with drawings and photographs. 16s.) London: Sigma Books, Ltd. 1947.

The study of human variation—the province of physical anthropology—to a large extent consists in attempting to solve the problem of man's origin and evolution. In this field knowledge of man's remote primate and less distant anthropoid ancestry has been accumulating at an increasing rate owing to the direct evidence furnished by the fossil discoveries in Java, China, Africa, and Europe during the last twenty years, as well as to the labours of the comparative anatomist and physiologist. To-day the search covers a formidable territory the exploration of which demands some acquaintance with general biology, genetics, geology, archaeology, anthropometry, and statistical method, and it is not surprising that no satisfactory general account is as yet available. Prof. Howells's book on human evolution is therefore a welcome introduction to this large and varied subject. In only 300 pages he has managed to cover the whole story of man's origins, evolution, and racial differentiation.

The account starts with a description of the primate mammal-like reptiles of the Mesozoic age from which in due course evolved the placental mammals, and among these, from some generalized stock, arose the Primate order. Then follows a description, based on zoological and palaeontological evidence, of the evolutionary radiation of the Primates, which yielded in due course the *Prosimii* of to-day, such as the lemurs and *Tarsius*, as well as the *Anthropoidea*. He describes the Tertiary *Anthropoidea* that are ancestral to modern forms. He traces the divergence of the human stock in relation to the hominid affinities of the *Dryopithecinae* and the important group of South African man-apes. With the beginning of the Pleistocene period we find at last individuals erect in posture, bipedal in gait, and whose limb proportions and brain capacity foreshadow the emergence of *Homo sapiens*.

Prof. Howells presents this account in an eminently readable fashion in about 100 pages. In the succeeding 100 pages he describes and briefly discusses the whole array of fossil men of the Pleistocene period. Prof. Howells deals judiciously and cautiously with the hotly debated controversies common in human palaeontology—with the relation of Java Man to Peking Man, with the hominid affinities of the South African man-apes, and with the status of Neanderthal Man in relation to that of *H. sapiens*. He is perplexed, like so many others, by the 40-years-old dilemma about Piltdown Man. He is cautious in his views of the "high antiquity" of *H. sapiens* as evidenced in the Swanscombe skull. In his final section, where he describes present-day varieties of man, he discusses sensibly and clearly the subject of human races and racial classification.

J. S. WEINER.

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The plates in Dr. R. R. Kracke's *Color Atlas of Hematology* (J. B. Lippincott; 30s.) are the same as in his larger volume on diseases of the blood. Unfortunately the colour rendering and the printing are not quite so satisfactory as in that beautiful work. The colour is too red, as in Plate 23 ("Chronic Myeloid Leukaemia"), or Plate 26 ("Subacute Monocytic Leukaemia"), or the apposition of the colours is inexact, as in Plate 17 ("Anaemia of Haemolytic Jaundice"). For all that, it is a good atlas at the price, and the text is a well-balanced summary of the blood diseases. Some of us might quarrel at the definition of the megaloblast as "the largest known recognizable precursor of the normal red cell," and we are a little less enthusiastic about folic acid than a year ago. Nevertheless, this is a book that could be put into the hands of the student or junior house-man safely and with great advantage.

## BOOKS RECEIVED

*[Review is not precluded by notice here of books recently received]*

***The Preparation of Solutions Isoosmotic with Blood, Tears, and Tissue.*** By C. G. Lund and others. (Pp. 173. 15s.) London: Heinemann Medical Books. 1947.

A monograph from the dispensary of the Bispebjerg Hospital, Copenhagen.

***Tuberculosis in Young Adults.*** By M. Daniels and others. (Pp. 227. 30s.) London: H. K. Lewis. 1948.

The report on the Prophit Tuberculosis Survey, 1935–44, carried out under the auspices of the Royal College of Physicians.

***Statistical Methods in Research and Production.*** Edited by Owen L. Davies, M.Sc., Ph.D. (Pp. 292. 28s.) London: Oliver and Boyd. 1947.

An account of statistics, with special reference to the chemical industry.

***An Introduction to Medical Statistics.*** By H. M. Woods and W. T. Russell. 2nd ed. (Pp. 125. 8s. 6d.) London: Staples Press. 1948.

An introduction to vital statistics, statistical methods, and sampling.

***Syphilis.*** By Henri Mathias. (Pp. 722. 600 francs.) Paris: Librairie Maloine. 1947.

A general account of the acquired and inherited disease.

***A Manual of Homoeotherapeutics.*** By E. A. Neatby, M.D., and T. G. Stonham, M.D. 3rd ed. (Pp. 960. 32s.) London: Staples Press. 1948.

An introduction for practitioners and students.

***Partnership in Education.*** By E. W. Woodhead and others. (Pp. 158. 7s.) Norwich: Jarrold and Sons. 1948.

Short accounts of different aspects of education.

***The Nature of Disease Institute: First Annual Report.*** By J. E. R. McDonagh, F.R.C.S. (Pp. 174. 21s.) London: Heinemann. 1948.

The author elaborates his theory of the causation of disease.

***Ocular Therapeutics.*** By W. J. Harrison, Phar.D., M.D., F.A.C.S. (Pp. 112. 18s.) Oxford: Blackwell. 1947.

A manual of prescriptions, with notes on treatment.

***Sexual Endocrinology of Non-Mammalian Vertebrates.*** By L. H. Bretschneider and J. J. D. de Wit. (Pp. 146. 15s.) London: Elsevier (Cleaver-Hume Press). 1947.

A monograph on research carried out at Utrecht University during the war.

***Midwifery.*** By Ten Teachers. Under the direction of Clifford White, M.D., B.S., F.R.C.P., F.R.C.S., F.R.C.O.G. 8th ed. (Pp. 560. 20s.) London: Edward Arnold. 1948.

A textbook for students and practitioners.

***The Psychology of Behaviour Disorders.*** By N. Cameron, M.D., Ph.D. (Pp. 622. 25s.) London: H. K. Lewis. 1947.

The book is an attempt to bridge the gap between psychology and psychiatry.

***Conference on Infertility, 1947.*** (Pp. 64. 5s. 6d.) Family Planning Association.

Papers on infertility read at the Oxford meeting in 1947.

***Public Health Administration in the United States.*** By W. G. Smillie, A.B., M.D., Dr.P.H. 3rd ed. (Pp. 637. 32s. 6d.) New York: Macmillan. 1947.

A general account of modern administrative methods in the U.S.A.

***Modern Trends in Ophthalmology.*** Vol. II. Edited by Arnold Sorsby. (Pp. 600. 3 guineas.) London: Butterworth. 1948.

A variety of articles by authorities on different aspects of ophthalmology.

***Dietetics in General Practice.*** By L. Cole, M.A., M.D., F.R.C.P. 2nd ed. (Pp. 160. 8s. 6d.) London: Staples Press. 1948.

In this edition some diets have been modified to accord with present circumstances.

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## BASIC MEDICINE

In the turmoil of medical politics the B.M.A. has found time to remind the profession and the public of its concern with the cultural activities of Medicine by publishing what may come to be considered as the most significant of its special reports—the Report of its Medical Curriculum Committee, now issued as a book under the title of *The Training of a Doctor.*[1] Under the chairmanship of Dr. Henry Cohen, Professor of Medicine in the University of Liverpool, the Committee has spent two searching years in its exhaustive review of the most fundamental problem of medical life—education; and to help it in its task men and women distinguished in various fields of medical work have given it unstinting aid. The Committee has been brilliantly served by its Chairman, Prof. Cohen, to whose enthusiasm and inspiration the form and content of the report owe so much. We print elsewhere an extended summary of the book now published, which deserves the repeated study of those responsible for training the doctor and of those perpetual students to whom qualification is but an introduction to a lifetime of study.

In his address[2] at the Annual Meeting of the B.M.A. in Montreal in 1897 William Osler said: "Undue reverence for authority as such, a serene satisfaction with the *status quo*, and a fatuous objection to change have often retarded the progress of Medicine." There is none of this in the present report. On the contrary there is a divine discontent with things as they are, along with sustained constructive thinking that illustrates the general theme with modern instances. Many who teach may disagree with some of the recommendations of the Committee; much of what it advocates may be impracticable, at least for the present; but the report is a challenge to medical educationists, and we may hope that the essence of its message will not be borne down by what Osler called "the weight of a complacent conservatism."

Of recent years there have been other outstanding reports on medical teaching, notably of the Goodenough Committee and of the Royal College of Physicians. But the B.M.A. Committee considers that the changes required in the curriculum are far more radical than is generally conceded. It advocates that changes "should be based on educational experiment rather than on surmise and presumption," and it issues its first challenge by refusing to "accept in its full implication the oft-reiterated view that the aim of the curriculum should be to produce a competent general practitioner." General practice is looked upon as a special form of practice founded on principles common to the study of medicine—what might be termed basic medicine. General medicine should be taught "as the basic clinical subject" and not be looked on as what is left after the specialties have been skimmed off. What is needed is the sense of the unity of medicine. Linked with this is an appeal for the renaissance of the general physician: "One of the primary reforms should be the return of the physician with a general outlook." It is he who should be the co-ordinator of medical teaching and the prevailing influence in the medical school. The Committee deplores the fission of teaching into compartments of uncorrelated knowledge. The unfortunate student is the victim of specialist teaching and special investigations. With each new incursion of the pure sciences into medicine new facts are piled on to the heap of the old that constitute the curriculum. Psychological medicine, social medicine, medical statistics—these and other subjects take on an added importance, and up goes the cry for additions to the curriculum and subsequently for that modern money-getter for the corporations, the special diploma. The curriculum grows like a coral reef, and the student looks in vain for a trustworthy chart in the ocean of medical knowledge.

The Committee repeats the indictment made often enough in recent years that the rapid advances in medical knowledge made during the past half-century "have not resulted in a proportionate improvement in the general efficiency of medical practice." It regards this as "a matter for regret and concern." The fault lies with the method of education, and the Committee considers that fundamentally it resides in the conception of medicine and medical training on which the curriculum has been based. The Committee's conception is exemplified by its proposals. It comes down heavily against a vocational bias in school education, and disagrees with the views of the Norwood Committee, supported by the Goodenough Report, that a school-leaving examination at the age of 18 might admit the student to "the medical curriculum proper." And it disagrees, too, with the suggestion in the Goodenough Report that the boy or girl with good elementary grounding in the basic sciences need spend little time on physics, chemistry, and biology in starting the medical course. The Committee repeats Flexner's saying: "The Physician should first of all be an educated man." The one way to prevent this is premature specialization at school. It is only the rare person who in later life overcomes the handicap of being forced too early into vocational studies. In an age of shifting material values and intense specialization a sound educational grounding is more than ever necessary if the medical man is to be other than a mental mechanic. It is to be hoped that the Committee may press its views with propagandist zeal on those who would use the last year at school to short-circuit the student into his medical studies. Having stressed the need for a broad education at school, the Committee advocates that the first university year should be devoted to physics, chemistry, and biology. The student will have the great advantage of learning from teachers of university status and training at a time when his mind is beginning to walk on legs of its own.

Of all the Committee's many excellent recommendations for medical education we consider their proposals for

[1] *The Training of a Doctor.* London: Butterworth. 1948. 7s. 6d. net.
[2] *Aequanimitas.* Third edition. London: H. K. Lewis and Son. 1939.
[3] *The History of Medicine*, by C. G. Cumston, M.D. Introduction by F. G. Crookshank, M.D., F.R.C.P. London: Kegan Paul.
[4] *The Works of William Harvey, M.D.* Translated from the Latin by Robert Willis, M.D. London: Sydenham Society. 1847.

schooling and the first university year—proposals not strictly applicable to medicine—the most important. Up to 18 the boy or girl needs the mental discipline and freeing of the intellect that can come only from a liberal education. If the student then decides to "go in for" medicine he needs to be thoroughly grounded in the basic sciences and in the scientific method if as a doctor he is to be other than a casual but hopeful purveyor of the numerous remedies now available to him. The modern doctor who is imbued with a sense of vocation must have more than school knowledge of chemistry, physics, and biology if he is to apply with understanding the findings of modern medical science. To the scepticism of the scientific outlook he must join the wide sympathies and culture that come from a study of the humanities if he is to apply with judgment his knowledge to the care and cure of his fellow men. It is a hard and uphill task; but Medicine is a high calling —not a trade.

The student passes from his first university year in the basic sciences to what the Committee calls "the preclinical period," a term it regards as unsatisfactory because the study of the normal man is an integral part of clinical work. It pleads for closer co-operation between the teachers of anatomy and physiology and deplores the growing scarcity of medically qualified teachers with the required expert knowledge in these subjects. Some of the best medical men, the Committee believes, are attracted to whole-time clinical appointments because of the better financial rewards. Higher salaries and improved prospects for the whole-time teacher of anatomy and physiology would do much to even the balance. The Committee levels the usual criticisms against the mountain of anatomical and physiological facts the student has to acquire, and stresses that it is the anatomy of the living that should be taught, not the anatomy of the cadaver; a bone is not a dead and rigid structure but a living process. Not everyone, however, will agree that less time should be spent on the experimental physiology of animals. Animal experiments are of the first importance in medical research, and the technique of the laboratory should be part of the student's intellectual equipment even though few of them will return to the laboratory after qualification. And it is well to be reminded that man is an animal, sharing with other vertebrates a common structural plan and surpassing them in mental equipment, the study of which the Committee considers should begin in the preclinical period, the course in normal psychology to follow the study of the anatomy and physiology of the central nervous system.

Throughout its report the Committee urges the need for "an integrated and synoptic view" of each phase of medical education—of the basic sciences, of human biology, of clinical medicine, of the human being as one whole compact of mind and body. What detracts from this view, whether tendencies in teaching or burdensome detail in what is taught, should be done away with. The approach to clinical medicine should be based "on the conception of disease as a disturbance or disequilibrium in the structure and function of the organism." The Committee regards the concept of diseases as clinical entities "simply as a descriptive convenience." There is a danger in the self-satisfaction that comes from attaching a diagnostic label, but one cannot lightly discard the classification of certain facts of observation into clinical entities "simply as a descriptive convenience." To state that a person has a disturbance of the lung is one thing; to correlate facts of observation into the clinical entity of pneumonia leads to greater diagnostic precision. The danger of the label is that it tends to make the student think of the disease labelled as something static. This tendency is increased by the splitting of Medicine into specialties and the segregation of patients with the same disease into special wards, blocks, or institutions. It is understandable that the research worker must narrow his focus, but for the practice of Medicine is it really necessary that there should be heart specialists *and* lung specialists? And among the latter is there really room for those who deal only with one disease of the lung, even though the segregation of tuberculous patients makes this difficult to avoid? At least the mediastinum seems to have escaped the notice of those who have been busy splitting up the body into compartments of special practice. Sensible of the dangers of this fissiparous tendency and of its ill-effect on the student the Committee presses for the return of the general physician, and recommends that "general physicians of broad interests should be appointed to Chairs of Medicine and that they should be responsible, with the assistance of a Committee of the senior teaching staff, for the organization of the teaching of the whole of clinical medicine." A movement on these lines would help towards the integration of Medicine, towards the synthesis many feel is now so much needed in what we call the art and science of Medicine. And such a synthesis would be facilitated by keeping alive the student's interest throughout his whole clinical period in the basic principles of general pathology. The Committee regards the divorce of pathology from clinical medicine as "one of the most serious defects of the present medical curriculum," and would bring the pathologist into the wards; so, too, the Professor of Pharmacology should be given "a definite status in ward teaching."

We note the Committee's opinion that the knowledge gained from attendance at operations is not worth the time spent watching and waiting; that anaesthesia is now a highly developed specialty; that present methods of training in obstetrics and gynaecology are not good enough; that paediatrics is one of the most important subjects in the curriculum; that the standard of training in psychiatry would be improved if general physicians would take more interest in the psychiatric aspects of illness; that socio-clinical conferences should be arranged for joint teaching; that the teaching of public health and social medicine must be reorganized "if the student is to become imbued with the concept of the prevention of disease and with the importance of the study of the social setting of the individual in health and disease." For the "intern year" the Committee favours trial of the method whereby the intern is assigned both in-patients and out-patients as they are admitted to hospital and not as medical or surgical cases. "at least six months will be devoted to this integrated study of patients and not be divided into 'medical' and 'surgical' appointments."

There is not the space here to do more than touch upon some of the points in a report that contains so much solid matter condensed in so readable a manner. The stress throughout it on the integration of Medicine, on the unity of Medicine, on the synoptic view, comes at a time when many feel with the late F. G. Crookshank[3] that "the twentieth century has as yet produced no such ordered and orderly presentation, as did the sixteenth, of the known facts concerning disease: duly set out and interpreted with respect to definitions, stated first principles, enunciated doctrines and terminal conclusions; embracing (as must any Science of Medicine) consideration of metaphysical problems of one kind or another, whether in relation to mental disease or to the understanding of the normal functioning of the body. . . ." Crookshank inveighed against the accumulation of "passive perceptions," and the B.M.A. Curriculum Committee is at one with him. William Harvey prefaced his *De Generatione Animalium*[4] with a discussion "on the manner and order of acquiring knowledge," following Aristotle, whom he called "my leader." "How base a thing," he wrote, "it is to receive instruction from others' comments without examination of the objects themselves, the rather as the book of Nature lies so open and is so easy of consultation." And again: "We are, I say, to strive after personal experience, not to rely on the experience of others; without which, indeed, no one can properly become a student of any branch of natural science. . . ." How this may be attempted at a time when we may feel less optimistic than Harvey about the ease with which the book of Nature may be consulted is shown in the B.M.A.'s exemplary Report on the Medical Curriculum.

## PULMONARY OEDEMA

The problem of pulmonary oedema becomes ever more complex as knowledge about the condition accumulates. The simple explanation, based on the experiments of Welch,[1] of unbalanced action of the two ventricles of the heart was for long accepted by clinicians, if not in all forms of pulmonary oedema at least in those associated with cardiovascular disease. This explanation will certainly not now bear critical examination. In last week's *Journal* we published Prof. G. R. Cameron's Sydney Ringer Memorial Lecture, in which he presented a useful review of this difficult subject. His analyses of the necropsy findings in 100 cases of pulmonary oedema and of the frequency with which pulmonary oedema was found at necropsies of patients who had suffered from various selected types of disease and injury revealed the usual preponderance of diseases of the cardiovascular and central nervous systems. The finding that 11 cases out of 100 of pulmonary oedema were associated with obstruction of the pulmonary veins by carcinoma seems rather unexpected, but cannot be interpreted without knowledge of the source of the necropsy material. Among cardiovascular diseases, pulmonary oedema was present at necropsy in 86% of patients with hypertension, 74% with chronic nephritis, 68% with coronary obstruction, and 65% with mitral stenosis. In cerebral haemorrhage the incidence of pulmonary oedema was 67%, and in fractured skull 63%. Of 28 patients dying with multiple fractures of bones, excluding the skull, 17 (61%) developed the condition.

Of the lung-irritant gases, among which Cameron and his co-workers have found that ketene has a place, phosgene has been most intensively studied. The mechanism by which pulmonary oedema is produced seems to be the same for all these gases and in all animals, with minor variations. Phosgene is hydrolysed on contact with the lining membranes of the respiratory tract, so that none of it reaches the circulation and its effects are produced locally. It has proved difficult to obtain evidence of these effects in the endothelium of alveolar capillaries histologically, but Short[2] has demonstrated changes in the mitochondria of these endothelial cells after exposure to phosgene before the capillaries begin to leak. After a latent period fluid leaks from the capillaries into the pulmonary air spaces. At first this is almost free from cells, but has a high protein content. The increasing pulmonary oedema can be shown in most animals to be closely followed by decrease in the circulating blood plasma. An exception is the rabbit, in which no haemoconcentration took place despite massive loss of plasma into the lungs; if, however, rabbits were kept on a dry diet before exposure, haemoconcentration usually occurred, and this is taken to suggest that the rabbit normally has a large available store of fluid on which to draw. Using the technique of canalization of the right lymph duct developed by Drinker[3] and his school, it was shown that as pulmonary oedema develops after exposure to phosgene the flow of lymph from the lung steadily increases, thus resembling other forms of pulmonary oedema. The main lymphatic channels from the lung are relatively narrow, and it is presumably when this increased flow can no longer be removed through them that oedema develops. Physiological saline is readily removed from the air spaces, probably directly into the blood capillaries, but serum persists in the lungs for about four days and is removed probably through the lymphatics. The abnormal permeability of the capillaries after gassing with phosgene leads to the rapid loss of transfused plasma into the lungs; Courtice and Foss[4] showed that in gassed dogs and goats transfused plasma and concentrated serum disappeared rapidly from the circulation and the animals' general condition worsened. In experimental phosgene oedema no evidence of interference with the pulmonary circulation can be found until the last stages; Cameron is satisfied that the capillary thrombosis described by Shaw Dunn[5] is due to stasis secondary to haemoconcentration. After careful consideration of what is known about the haemodynamics of the lesser circulation Cameron concludes that pulmonary oedema may result from injury of the lining cells of the lung capillaries alone.

The absorption of certain chemicals into the circulation may be followed by pulmonary oedema. There has been great interest recently in the effects of substances allied to thiourea. Jones[6] showed that $\alpha$- and $\beta$-naphthyl thiourea and $\alpha\alpha$- and $\beta\beta$-dinaphthyl thiourea in toxic doses caused

[1] *Arch. path. Anat.*, 1878, **72**, 375.
[2] *J. Path. Bact.*, 1944, **56**, 355.
[3] *Pulmonary Edema and Inflammation*, 1945. Cambridge, Mass.
[4] *Lancet*, 1946 **2**, 670.
[5] *Quart. J. Med.*, 1919–20, **13**, 129.
[6] *J. Path. Bact.*, 1946, **58**, 483.
[7] *Thorax*, 1946, **1**, 182.
[8] Doniach, I., *Amer. J. Roentgenol.*, 1947, **58**, 620.

massive pleural effusions and pulmonary oedema which seemed to be due to a specific action on the lung capillaries. Cameron considers that the oedemas associated with the absorption of acetic and butyric ethers, iodides, and methyl salicylate are caused in the same way, and points out that localized oedemas of some other tissues are caused specifically by certain other drugs.

Turning to the pulmonary oedema associated with nervous disturbances, Cameron, like Daly,[7] criticizes bilateral vagotomy as a method of producing neurogenic oedema, since it may result in aspiration of oral secretions into the lungs with anoxia, and if pulmonary oedema develops the responsible factors are difficult to identify. He has found that the injection into rats intracisternally of a solution of fibrinogen followed by thrombin, producing a fibrin film within the cisternae, leads to acute pulmonary oedema, fatal within a few minutes. Dividing the vagi reduces or prevents this oedema. Cameron thinks it likely that raised intracranial pressure is a link in the chain of causation of the pulmonary oedema produced by this procedure. After reviewing what is known as the vasomotor nerves of the lungs, he suggests that the question of a nervous mechanism controlling the permeability of the lung capillaries should be re-examined.

Pulmonary oedema in cardiovascular diseases is commonly basal, though in uraemia[8] it is often perihilar. Cameron offers no explanation of this peculiarity of uraemia; Drinker's[3] finding that increased breathing movements help to remove fluid from the lungs suggests the possibility that the hyperpnoea of uraemia, which would increase expansion especially at the periphery of the lungs, may be responsible for the relative freedom of the bases from oedema. Cameron accepts the emphasis placed upon left ventricular failure in the pulmonary oedema of cardiovascular disease, even though he confesses to "difficulty in sorting out the state of the two ventricles." He has been unable to confirm Welch's results in his laboratory; ligation of the rabbit's aorta near the heart did not constantly give rise to lung oedema. The mechanism of adjustment between the two circulations is such that only a transitory dissociation of output from the two ventricles is conceivable. Cameron considers that, in addition to the higher head of filtration pressure which can be the result of a rise of pulmonary venous pressure, there are other causal factors in the development of pulmonary oedema. Among these are anoxia, which has been stressed by Drinker,[3] dyspnoea, bronchitis, and depletion of the plasma protein. The inclusion of dyspnoea, presumably due to other conditions, in this list of possible contributory causes of pulmonary oedema shows clearly the divergence of view from the hypothesis that the condition is due to left ventricular failure, in which paroxysmal cardiac dyspnoea is customarily regarded as the earliest stage of an attack of pulmonary oedema. Studies of heart–lung preparations have confirmed that pulmonary arterial and venous pressure must be grossly raised before oedema occurs, that oedema may appear before any change in pulmonary arterial pressure, and that changes in the perfused blood favour the development of oedema, presumably by damaging the capillary endothelium. In the latter connexion Daly[7] has found that perfusing a heart–lung preparation of a dog with human blood causes the rapid development of severe lung oedema, though perfusion with horse blood keeps the lungs dry.

Pulmonary oedema fluid produced in widely different ways has been found in Cameron's laboratory to contain a high proportion of protein. Such diverse methods as ligation of the aorta, oxygen poisoning, and intravenous injection of methyl salicylate produced oedema fluid the protein content of which varied from 4.25% to 7.62%. Cameron considers that this indicates that the unifying principle is a disturbance of capillary permeability, and suggests that future investigations should be directed to determining whether endothelial permeability is affected by nervous influences, by alteration of blood flow, and by environmental variations, especially in gaseous exchange. Among these environmental variations may perhaps be included capillary toxins, which Daly[7] suggests should receive more attention in investigations of clinical pulmonary oedema.

## REPRESENTATIVE MEETING

A Special Representative Meeting is being held on Friday of this week to consider the result of the April Plebiscite and the three Recommendations of the Council, published in the *Supplement* to the *Journal* of May 8. A large number of motions and amendments have been submitted by Divisions, and in their bulk constitute a formidable agenda. Many of these are couched in a critical tone, and it may be expected that controversy will be lively. Since the last meeting of Council a B.M.A. deputation has had discussions with the officers of the Ministry of Health and on May 25 with the Minister himself. The statement of the position resulting from these discussions will be placed before the Representative Meeting, and it is hoped to comment on the general situation in next week's *Journal*.

## THE CAMBRIDGE MEETING

Sir Lionel Whitby, President-Elect of the British Medical Association, makes an appeal in our correspondence columns this week for members who intend to be present at the Annual Meeting at Cambridge in June to send in their applications for accommodation at once. Forms of application have been printed in three recent issues of the *Supplement*, and the same form is printed on a sheet loosely inserted into this week's *Journal*. Sir Lionel points out that only a small number have applied for accommodation, and it is essential for those who are organizing the meeting to have a rough estimate of the numbers likely to attend so that firm bookings may be made. Before the war it was usual for the majority of those who attended the meeting to apply for accommodation only two or three weeks before the meeting was actually held. This was a cause of dissatisfaction to those responsible for the arrangements of the meeting, but in the easy days of peace it was not too difficult to deal with the last-minute rush. To-day, those responsible for the organization of the meeting are faced with every possible difficulty, and we would urge

members to apply at once out of courtesy to our host, the Cambridgeshire and Huntingdonshire Branch of the B.M.A. This Branch is determined to make this, the first Annual Meeting to be held since 1939, a memorable occasion and worthy of the best traditions of previous annual meetings. The setting for this year's meeting is ideal for members of a learned profession, and those who do not know Cambridge and the treasures it possesses will not wish to miss the opportunity of being there in less than a month's time.

## ROYAL SOCIETY CONVERSAZIONE

Many of the exhibits at the Royal Society conversazione on May 20 again displayed the uncanny ingenuity of the human mind when it inquires into the perplexities of nature. Of particular interest to medical men were the demonstrations of phase-contrast microscopy. The illuminating beam is treated in such a way that variations in phase are converted into variations in amplitude, so that parts of the living cell with different refractive indices, such as cytoplasm, chromosomes, and mitochondria, are clearly distinguished as light or dark without being stained. The resolution obtained is about double that with ordinary light. The chromosomes appeared as dark threads and blobs in the fresh preparation of sarcoma cells shown by the National Institute for Medical Research; in greatly enlarged photomicrographs they could be seen in the various stages of mitosis. A short film that speeded up the mitotic dance gave a remarkable front-row view of the chromosome chorus performing its evolutions in the dividing osteoblasts and fibroblasts of the embryonic chick and in the fibroblasts of the frog and newt.

The Natural History Section of the British Museum displayed a number of insects, molluscs, and other specimens immured, like flies in amber, in glass-clear blocks of methyl-methacrylate ("perspex"). The specimens are imbedded in the liquid monomer, when is then polymerized to the solid perspex by irradiation with ultraviolet light. This technique should prove useful in preserving pathological specimens, obviating the fraying and subsequent disintegration that often take place in liquid preservatives. The Wellcome Research Institute exhibited a biologically balanced aquarium for the culture of the Egyptian snail vectors of schistosomiasis—*Planorbis boissyi* and *Bulinus truncatus*. The most suitable food for these molluscs is boiled lettuce; they will accept certain other green vegetables such as boiled cabbage, but no doubt the laboratory is all the better for not smelling like a hotel kitchen. Growing plants regulate the exchange of oxygen and carbon dioxide, and oligochaete worms consume the excretory products and decaying vegetation. An apparatus shown by the Cambridge Instrument Company measured the percentage of oxygen in a gas by the changing of its paramagnetism with temperature. The gas flows across the ends of a small tube of which half is in a strong magnetic field. The middle part of the tube is heated by a centre-tapped platinum resistance which forms two arms of a Wheatstone bridge. If the gas contains oxygen a flow is set up in the tube which cools the heater wires, causes a relative change in the resistance, and throws the bridge out of balance; the result is recorded electrically in terms of the oxygen content.

An ingenious labour-saving device—for the laboratory rather than the home—was an ultrasonic memory system designed by the Cambridge University Mathematical Laboratory for an electronic calculating machine. Numbers are converted into electric impulses, which are then passed in the form of ultrasonic waves into a column of mercury about four inches long. After traversing the column they are converted back into electric pulses, amplified, tidied up, and returned to the input. They thus circulate indefinitely and are available when required. A problem in rheology—the study of the flow and deformation of matter—afforded light relief to those who enjoy ball games. Silicone putty, which appears like ordinary putty and is of a similar consistency, has the peculiar property that when a stress is applied to it for a very short time it behaves as an elastic solid. It flowed slowly from the orifice of a reservoir on to a platform about 18 inches below, where it spread out into a flattened mass. A gravely enthusiastic audience dropped on to it some metal balls, which, instead of sinking in with a dull thud, bounced off with the surprising rebound of acrobats from a spring mattress.

## ANNUAL REVIEW OF MICROBIOLOGY

It is becoming difficult to an increasing degree for workers even in a fairly restricted sphere of medicine to keep track of the literature of their subject. This difficulty is met to some extent by abstract journals and by journals comprising monographs or reviews on selected subjects. There are also annual publications devoted to keeping their readers up-to-date, and among the most valuable of these to academic workers in particular have been the *Annual Review of Biochemistry* and of *Physiology*. It will be welcome news to many that there is now an *Annual Review of Microbiology* published by the same academic organization. The 1947 volume[1] is now available, and the subjects and authors for 1948 are listed on its dust-cover. The present volume contains seventeen chapters, of which fourteen are by American and three by British authors. D. D. Woods writes on bacterial metabolism, E. F. Gale on the nitrogen metabolism of bacteria, and E. M. Lourie on chemotherapeutic agents. Antibiotics naturally get a chapter to themselves, and it is interesting that about sixty distinct substances are considered worthy of more or less detailed description. They are classified according to their sources, beginning with the various substances which have been obtained from organisms of the *B. subtilis* type. Since this was written, aerosporin has been favourably reported on by G. Brownlee and S. R. M. Bushby,[2] particularly for the treatment of whooping-cough, and R. K. Callow, R. E. Glover, P. D'Arcy Hart, and G. M. Hills[3] have had promising results with licheniformin in experimental studies of the treatment of tuberculosis. The antibiotics of the genus *Bacillus*, which of course include gramicidin, the first bacterial product ever shown to be capable of therapeutic action, are worth watching.

There is an interesting chapter on immunization by J. Freund, who describes the remarkable effects of vaccines administered in oil emulsions, and another on the quaternary ammonium compounds, a class of disinfectant about which exact knowledge and clear thinking increase in importance *pari passu* with their popularity. T. Francis was the author selected to write the chapter on the respiratory viruses. Other subjects are immunochemistry, industrial fermentations, two chapters on fungi, and four on various aspects of the study of protozoa. It would be easy to criticize this list of subjects by pointing out others which might have been worthy of inclusion, but the choice has been well made, and every chapter contains not only a mass of information and a valuable list of references, but the individual views of an authority on the subject.

[1] Vol. 1, 1947. Stanford, California: Annual Reviews Inc. London: H. K. Lewis and Co. Price 36s.
[2] *Lancet*, 1948, **1**, 127.
[3] *Brit. J. exp. Path.*, 1947, **28**, 418.

# MEDICAL EDUCATION: A NEW APPROACH

## REORIENTATION OF THE CURRICULUM

*(B.M.A. Special Committee Report)*

The Council of the British Medical Association three years ago set up a Special Committee to review, in the light of later developments and the requirements of modern practice, the B.M.A. Report on Medical Education, published in 1934. The Special Committee was fortunate in its choice of Chairman—Prof. Henry Cohen, who holds the Chair of Medicine in the University of Liverpool. The other twenty members represented many branches of medicine. They included three deans of medical schools or faculties, seven senior physicians or surgeons attached to teaching hospitals, four general practitioners, one representative of medical students, and the five chief officers of the Association, four of whom are also in general practice. Scotland was represented by five members.

The Report[1] now issued, a document of 150 pages, covers the whole subject of undergraduate education, from the pre-university period to a compulsory year of internship. The Committee received oral or documentary assistance from some eighty authorities on the subject. The result is a contribution of the first order to the literature of medical education. The Report approaches the subject on a broad basis of criticism, destructive and constructive, and it is written in an individual and attractive style as though it were the work of one able pen instead of the combined effort of twenty-one people with differing points of view. So impressed was the Council with the Report submitted to it that it has agreed to set up another committee—though this has not yet been appointed—to carry the subject forward on to the postgraduate level.

### A Drastic Overhaul

In the early part of its Report the Committee recommends some radical changes in premedical and preclinical instruction, but the most drastic overhaul is proposed for the clinical period. It believes that a new approach to medical education and practice should be based on the conception of disease as a disturbance or disequilibrium in the structure and function of the organism, the idea of "diseases" as clinical entities being regarded simply as a descriptive convenience. The educational implications of such a change, as the Report states, are far-reaching.

Perhaps the key passage to the whole outlook of the Report is to be found in the middle of it, in the chapter headed "The Student and the Patient":

> "The Committee believes that, whatever the cost of reconstructing the curriculum, we should return to first principles and so remodel the training of our students that they will base their future practice on an understanding of each patient as a 'whole,' using the resources of the specialties as aids to diagnosis and treatment.
>
> ". . . One of the most serious defects in present-day medical training in the clinical period is the failure (i) to regard the patient as a whole, and (ii) to teach the principles and practice of general medicine. If the medical practitioner is to treat his patient 'as a whole' he must be taught how to do so in his undergraduate years, and he cannot be properly trained in this conception by the present method of dividing medicine into a number of distinct and separately taught compartments."

The time has come to remodel the clinical curriculum so as to provide the student with a thorough basic training for modern medical practice. He must be taught the general principles of medicine, trained to diagnose and treat common ailments in minor medicine and surgery, and to recognize conditions for which he should summon expert help. More specifically, he must learn the functions and scope of medicine, the nature of health and of disease, the fundamental principles of general pathology, the method and purpose of diagnosis, the general principles of prevention, treatment, and after-care, the causation, diagnosis, and treatment of common ailments, and such special pathology, medicine, and surgery as will enable him to recognize emergencies and conditions for which special measures are required.

[1] *The Training of a Doctor. Report of the Medical Curriculum Committee of the British Medical Association.* London: Butterworth and Co. (Publishers), Ltd. Price, 7s. 6d.

This cannot be achieved by requiring him to attend courses in the several departments, each organized without liaison with other departments. Yet this is what occurs in most medical schools to-day, "with the result that the newly qualified doctor embarks on responsible practice with an idea of medicine as an inchoate collection of facts isolated in special departments, and he quickly finds that his training has failed to give him competence to deal with the ordinary problems of his everyday professional life."

### The Integrated Curriculum

The clinical curriculum should be a single whole, planned by a committee of the professors or senior members of the teaching staff. Transition from the preclinical study of the normal should be effected by introducing the student to the basic principles of general pathology, and the remainder of the clinical period should be devoted to the study of the foundations of the main branches of medicine, with short courses in special subjects. All subjects should be dovetailed into one another. The courses in special subjects should deal mainly with the scope and potentialities of diagnosis and treatment in specialties with highly expert techniques, but such teaching should be incorporated where possible in the courses of general medicine, surgery, and pathology. Topics such as social medicine and psychiatry should be regarded as integral to all aspects of medicine, and so far as possible dealt with in relation to the wider subjects rather than as distinct and separate courses.

In the Committee's view, teaching-hospital consultants and specialists at present tend to be concerned too much with the status of their specialties; thus the student gets a distorted view of the relationship between the specialties and general medicine. One means of restoring the balance will be by the return of the physician with a general outlook. General physicians with broad interests should be appointed to chairs of medicine, and be responsible, with the help of a committee of the senior teaching staff, for organizing the teaching of all clinical medicine. Specialists would teach special aspects, but these would be fitted into the general plan. The abrupt division into medical and surgical wards may have to go. "Measures that disintegrate medicine should be avoided; all that fosters an attitude which regards the patient as a 'whole' should be supported."

### Methods of Teaching

The return of the physician with a general outlook would meet the criticism that although the majority of students will become general practitioners they are taught by consultants and specialists, and thus get a false perspective of the conditions of general practice. Some older men in practice can recall being taught by teachers who, outside the medical school, were general practitioners, usually general physicians of the best type. Such teachers have been largely superseded by specialists. But the Committee finds difficulty in accepting the proposal that the general practitioner should be brought into the teaching hospital or the student sent to the general practitioner. The present generation of doctors has been educated in a consultant atmosphere, and it might be difficult to find a sufficient number of really suitable general practitioners who have developed the broad outlook desired and also have the ability and inclination to teach. Other practical difficulties are pointed out, such as the strain which the continuous presence of even one student might impose upon a practitioner, and the possible resentment of patients and relatives at the attendance of a student. In these circumstances the student himself might receive only doubtful benefit.

The Committee notes as one of the shortcomings of the Goodenough Report the use of the cliché "teaching and research," as though they were synonyms; usually they are antonyms. Lecturers and professors should be appointed for their skill as teachers. Lectures should have more care and forethought than is often given to them. The good lecturer avoids a textbook presentation and makes no attempt to cover the whole field. The criterion of the acceptable teacher is expressed in Pope's couplet:

> Men must be taught as if you taught them not,
> And things unknown propos'd as things forgot.

The good teacher will remember that the student must have leisure. A syllabus in which every minute is allocated to

definite work or duties is to be condemned. He will be a better student for devoting some of his time to non-medical interests.

The Report draws attention to one notable omission from the nurture of the medical teacher. He receives no training in the art of pedagogy. And teachers are not often "born."

### The Time-table

A quotation on the fly-leaf of the Report, from A. Castiglioni's *History of Medicine*, states that Galen estimated that eleven years was necessary to equip the physician with his necessary knowledge, whereas his contemporary and enemy Thessalus declared that six months' training would make an excellent physician. The proposed reorientation of the curriculum, with its emphasis on a rational understanding of the basic principles of medicine, will permit the ground to be covered in five and a half years, but it is recommended that there should be, before registration, a compulsory year of resident appointments, which should be adequately remunerated.

The premedical study of the basic sciences should occupy the first year, and the preclinical studies should cover one year and one term. After the preclinical examination a transition course of six months should be undertaken, followed by an examination in the principles of general pathology, this to take place in July of the third year. Then follow the clinical years. The time-table suggested by the Committee would complete all lectures and prescribed clinical work by the end of the first term of the sixth year, leaving one clear term free to the student for personal revision, unhampered by official classes, before the qualifying examination in March or April of that year. The plan would be as follows:

| *Year* | *Months* | *Stage* |
|---|---|---|
| 1 | Oct.–July Examination | Premedical |
| 2–3 | Oct.–July; Oct.–Dec. | Preclinical |
| 3 | Jan.–July Examination | Transition |
| 4–6 | Oct.–July; Oct.–July; Oct.–Dec. | Clinical |
| 6 | Jan.–March Examination | Revision |
| 6–7 | April–Sept.; Oct.–March | Paid intern appointments |

The total number of lectures during the clinical period is 580, and a suggested allocation to the various subjects is given—100 to pathology and bacteriology, 90 to medicine, 70 to surgery, 50 to social medicine, and so on—but these allocations are no more than suggestions, put forward with no desire to dictate to the authorities of the medical schools. The student appointments to clerkships are summarized as follows:

| *Subject* | *Period* |
|---|---|
| A. In-patient and out-patient: | |
| Medicine (including psychiatry) | 6 months |
| Surgery (including orthopaedics and anaesthetics) | 6 „ |
| Obstetrics (in residence) | 2 „ |
| Gynaecology (to follow obstetrics) | 1 month |
| Paediatrics (to follow gynaecology) | 3 months |
| Casualty (in residence) | 1 month |
| Pathology | 1 „ |
| B. Out-patient only: | |
| Ear, nose, and throat | 24 hours (12 sessions) |
| Ophthalmology | 24 „ 12 „ |
| Dermatology | 24 „ 12 „ |
| Radiology | 12 „ 8 „ |
| Venereal diseases | 12 „ 6 „ |
| Physical medicine | 12 „ 8 „ |
| Psychiatry | 24 „ 6 out-patient and 6 extramural visits |

A session is of two hours' duration except in radiology and physical medicine, where one and a half hours is regarded as adequate.

The Report also furnishes a preclinical time-table. It is suggested that four terms of twelve weeks be devoted to the preclinical period, together with a month of the summer vacation, this month to be devoted to completion of dissections, with radiological demonstrations of thorax and abdomen. A programme is given for lectures, practical work, and tutorial classes; the lectures in the first, second, and third terms to be 36 in anatomy and histology and a like number in physiology and biochemistry, and in the fourth term 24 in anatomy and 36 in physiology, including in each subject clinical and applied, and 12 in psychology.

### The Aim in View

The undergraduate curriculum, in the Committee's view, can do no more than lay the foundation of a doctor's education; but it should stimulate him to remain a student all his life. The curriculum can never be final; it is always moving, but never arrives. Strong disapproval is expressed of specific vocational trends in premedical school-teaching. Too often also current medical curricula are so subdivided as to lack continuity, and the student feels that each segment is an obstacle to be surmounted before the next is reached.

"The most frequently reiterated criticism of the curriculum which the Committee heard was that it conduced to the memorizing of a mass of detail without any appreciation of the underlying general principles, and that teaching was too often of the spoon-fed type instead of being aimed at the promotion of right habits of thought. The Committee believes that this criticism is often well founded."

The aim of medical education to be steadily kept in view is not to impart a mass of factual information in each branch of medicine, but to equip the student with sound basic principles, including the scientific outlook and method, a knowledge of the fundamentals of the medical sciences, competence in, and understanding of, certain indispensable techniques, and an intellectual resourcefulness and initiative in the handling of unusual and unexpected situations. The pressure of interested specialist groups to include more and more of their branches in the curriculum must be resisted. "Depth of understanding must not yield place to breadth of knowledge."

"The Committee does not, therefore, accept in its full implication the oft-reiterated view that the aim of the curriculum should be to produce a competent general practitioner. General practice is a special form of practice which must be founded on general basic principles and appropriate postgraduate study."

This leads on to the question of selection of students. The number of applicants far exceeds the places available for them in the schools. Even allowing for the post-war "bulge," the task of selection is formidable. Moreover, the field of recruitment is in future unlikely to be as restricted as in the past by social or economic barriers. The responsibility of selection should be in the hands of a small committee of the medical staff of the school, not thrust upon the dean alone.

The criteria to govern selection are intelligence, character, and interest in a medical career. As for intelligence, "what we need to achieve is a test which will reveal a native wit which is capable of forming habits of thought and not simply of absorbing knowledge." In assessing character, school reports and achievements in games will be of value. Interest in a medical career is difficult to assess with a candidate of immature age, but aptitude in scientific method may give some indication. Physical handicaps should not debar if they do not interfere with basic training: a man with an old infantile paralysis may well be accepted, whereas a man with severe deafness may be rejected until hearing-aids are more perfect. The conditions under which Government grants are given ensure that there is no unfair discrimination against women students, but marriage possibilities and consequent loss to the community cannot be ignored in assessing sex ratios.

### The Threshold

In pre-university studies general cultural subjects, including science, should be taken. Factual knowledge of basic sciences will be extended during the first university year. The Committee wholly disagrees with the Goodenough Committee suggestion that a school-leaving examination at 18 might be accepted for the medical curriculum proper, and that the student coming from school with a good elementary grounding in general science need spend relatively little time on physics, chemistry, and biology in his medical course, such special training as is necessary being given as part of the teaching in anatomy and physiology. Such a view denotes a failure to recognize the fundamental importance of a thorough training in the methodology of science, which can best be inculcated in a special course in science at a university standard and in a university atmosphere.

Much of the disappointment which attends the existing first-year course is due to the fact that it is regarded as a Cinderella by the science departments in the universities, so that often indifferent and uninterested teachers are appointed to it. The subjects are taught, as Abraham Flexner said, "at distinctly a schoolboy level, and in a mechanical and humdrum rather than an imaginative and scientific spirit."

The first-year course should be lifted to an altogether higher plane. This basic training should be conducted by teachers of outstanding ability and qualifications, having adequate knowledge, a suitable personality, and a scientific spirit. One medical school has drawn on postgraduate research students to act as tutors, and the plan works excellently. In practical work, experiments should take the form of questioning and exploring practical phenomena, instead of the few stock experiments for which multiple sets of apparatus are provided.

It is suggested that instruction in the basic sciences might be advantageously developed from modern concepts of the atom as the starting-point. Physics, chemistry, and biology are not to be regarded as a mere introduction to the courses in anatomy and physiology. Ten lectures in the premedical course might be given on statistics—enough to enable the student to realize the danger of clinical impressions being overweighted by the striking episodes which remain fixed in the memory and to unmask the effects of propaganda which quotes only figures favourable to a thesis.

### The Preclinical Period

The preclinical period—an unsatisfactory term—is an integral part of clinical study. The old distinction that anatomy is the study of structure and physiology the study of function cannot be rigidly maintained. In the living body anatomy and physiology are inseparable. Examples are given—the action of the voluntary muscles, the nervous system, etc.—of the difficulty of separating these two subdivisions of human biology.

The complaint is made that anatomy and physiology are taught in excessive detail. The aim in the preclinical period should be to give the student a synoptic view of the structure, functions, and processes of the human organism. The integration of anatomy, physiology, and psychology also is not a matter of co-ordinating syllabuses; it must be the continuing aim throughout the course. Teaching has suffered in some medical schools because these subjects have been entrusted to a research worker with little interest in or aptitude for teaching. Where the interests of the head of a department, preclinical or clinical, are mainly in research, a first-class teacher of senior status should be appointed on whom should rest the responsibility for departmental teaching.

The anatomy required is that of the living subject. The study of the cadaver is a means to an end, not an end in itself. It is suggested that, along with dissection, living anatomy classes should be formed—groups of students in charge of a teacher for the systematic identification, in the living subject, of the different structures. Dissection of the entire body is, nevertheless, essential, though there might be some reduction in topographical detail, and more use made of prepared dissected specimens. Dissection of thoracic and abdominal viscera must be performed with the aid of radiology. The anatomy of the nervous system should be taught more adequately. New textbooks of anatomy, not so encyclopaedic in detail as the old, are required.

In the physiology course the two reforms most urgently needed are (1) its correlation with anatomy and the preclinical and clinical subjects, and (2) reorientation of the syllabus with greater emphasis on human physiology and less on animal experiment. A list of topics to be covered in a syllabus is given, but it is the method of presentation and the balance of detail which determine the suitability of the course. There is no excuse for devoting to the chemistry of the nucleoproteins eighteen times the space given to visceral pain—the proportion found in one standard textbook on human physiology.

Excessive time is devoted in some schools to animal experimental physiology, leading the student to overestimate the importance of technical skill and to fail to appreciate that the true purpose of animal experimental physiology is to help him to acquire knowledge which cannot be gained by observation and experiment on the human subject. The suggestion is made that the students should work in pairs and carry out simple experiments on each other. A list is given of 37 experiments, on the blood, the cardiovascular, respiratory, and nervous systems, and the special senses, which could be carried out in this way. Errors of metabolism, deficiency diseases, disturbances of acid-base balance, and endocrine disorders offer an excellent opportunity for impressing on the student the links which bind the preclinical to his later clinical studies.

In a chapter on the teaching of normal psychology suggestions are made for taking the student from general principles to sufficient detail. The student should not be introduced at this stage to problems of abnormal behaviour. The ideal method of teaching psychology would be by seminar discussions rather than formal lectures, but there may be practical difficulties in the way. The least suitable person to teach psychology is the old-fashioned member of the medical staff of a mental hospital, whose experience is confined to abnormal psychology and almost entirely to the treatment of psychotic patients.

### And So to the Patient

The purpose of an introductory course at the beginning of the clinical period is to lead the student by a smooth and unbroken transition from normal man to deviations from normal. He should be presented with a rational explanation of disease founded on anatomy, physiology, and pathology, with some instruction in history-taking and recording. The Committee suggests that two terms be devoted to the introductory course, and that at the end the student should be required to pass a professional examination in general pathology. At this point criticism is made of present-day textbooks, which often fail to provide a suitable and intelligent background for lectures. A graded series of textbooks, especially introductory ones, in the major clinical subjects is required.

In his clerkships in medicine, surgery, obstetrics and gynaecology, and paediatrics the student will be introduced to the responsible care of patients. He should be encouraged to regard himself as their doctor, becoming fully acquainted with them through his history-taking, and following every stage in their treatment and investigation. Study of in-patients should precede that of out-patients. There is no need for in-patient clerkships in the specialties.

The teaching of pathology should be spread over the whole of the clinical years, and the pathologists and clinical teachers should co-operate in the instruction given in lecture theatre, wards, laboratory, and post-mortem room. Altogether, including the introductory period, 200 hours should be assigned for lectures and demonstrations in pathology and bacteriology, and 80–100 hours' practical work. In the final year a month's clerkship in pathology will consolidate the student's knowledge. At present there is too great an emphasis on morbid anatomy and histology and on post-mortem findings at the expense of functional pathology and biopsy methods. Time should not be given to detailed discussion of the minutiae of pathology.

It is considered that pharmacology also should not be concluded in the early part of the clinical period, but the relation between pharmacological action and the use of drugs in disease should constantly be brought to the student's notice during the whole of his clinical studies. The course in materia medica, pharmacology, and therapeutics should cover about 140 hours. A few simple experiments with drugs which will give the student useful assistance are listed. Part of the course should be devoted to systematic teaching of therapeutic methods—poulticing, blistering, dry-cupping and others. Many doctors enter practice unable to perform the simplest therapeutic procedures, such as the giving of an enema. Instruction in the proper writing of prescriptions will not be a waste of time. The practising doctor should be able to understand when he writes a prescription what he is asking his pharmacological colleague to do.

### General Medicine and Surgery

General medicine is the linchpin of the clinical subjects. It should be taught as the basic clinical subject from which many specialties have branched off. The special purpose of the teaching is to inculcate a sense of the unity of medicine. The instructions, spread over the whole of the clinical years, should comprise systematic lectures, a junior and senior clerkship in the wards, constant attendance in out-patient departments and at

a minor ailments clinic, and a month's residence in a casualty department. The course of lectures should be planned by the professor, who might with advantage deliver most or all of them himself. Six months should be devoted to medical clerking and out-patients. In the wards three or four beds should be assigned to each student. A satisfactory medical teaching unit would comprise from 40 to 60 beds under a chief and assistant and provide for 10 clerks each term. At least two tutors should be on the staff of such a unit, to ensure that individual tuition is given. The student should be made familiar with the recognition of common infectious fevers treated in isolation hospitals, and arrangements should be made during the second and third clinical years for attendance at these hospitals as clinical material becomes available.

The need for the student to study chronic disease demands greater emphasis. In his third clinical year a few patients suffering from various forms of chronic disease might be allocated to him.

A preliminary course in the principles of surgery will have been given during the transition period. The clinical period should include two dressing appointments of three months each, a junior one in the first year and a senior one after medical clerking is completed, a series of systematic lectures covering two years, and ample opportunites for work in the out-patient and casualty departments. The first clinical appointment should be devoted to in-patient dressing, the second primarily to out-patient work. At least part of the second appointment should be resident, so that experience of acute abdominal emergencies may be obtained. In general the student should be expected to attend only operations on his own patients. For the purpose of undergraduate education orthopaedic and traumatic surgery should not be wholly divorced from general surgery. Work in the fractures clinic should be included in the second surgical appointment; a particular case should be followed continuously from admission to discharge. Instruction in orthopaedic conditions should include the principles and methods of rehabilitation. Arrangements should be made for the student to see something of other branches of surgery usually undertaken by specialists, such as thoracic, plastic, and neurological surgery. Lectures and discussions on common diagnostic problems (lumps under the sterno-mastoid, acute pain in the right iliac fossa, a limp in a child) should be introduced into the systematic course and dealt with in clinical lectures.

The scope and principles of anaesthesia must be learned, with the ability to administer simple anaesthetics for minor operations. Teaching should not be more detailed than the general practitioner is likely to require in his ordinary practice. More advanced and complicated techniques should be left for post-graduate study. Six lectures in anaesthesia may be given, with experience in practical work. The student should be assigned to an anaesthetist during his surgical clerkship, when he may probably have the opportunity of administering 20 or 30 anaesthetics.

### Obstetrics and Gynaecology: Paediatrics

Under the present Medical Acts a basic training in midwifery must be undergone by all medical students. The curriculum should provide as high a standard of training as will enable the practitioner to fulfil the requirements of the Acts without having a special postgraduate diploma.

The main direction of improvement should be to take into fuller account the needs and resources of the family doctor and to devote less of the student's time to the study of the rarer, if more interesting, cases that come into hospital for specialist attention.

It is recommended that the course in obstetrics and gynaecology should be taken after the student has spent six months in medical clerking and six months in surgical dressing. The instruction should include 30 or 40 systematic lectures in obstetrics and 15 in gynaecology. Each case should be allotted to a student on attendance at the hospital, and attendance on a patient in labour should always have precedence over lectures or other duties. Efforts should be made to allow the student to deliver at least 20 normal cases. He should, when possible, also carry out at least one low-forceps delivery and one breech delivery in a multipara, and should have practice in the repair of perineal tears and in episiotomy incision. In the arrangement of a teaching hospital adequate residential accommodation for students should be provided having easy access to the labour wards.

A series of 15 systematic lectures should be sufficient for theoretical instruction in gynaecology, and the main object of the clinical instruction in that subject should be to teach the student to make a pelvic examination with sufficient skill to recognize and interpret obvious and gross departures from the normal.

Paediatrics, "one of the most important subjects of the medical curriculum," should be studied after the course in obstetrics and gynaecology has been completed. The student would then come to it with adequate preparatory knowledge, having received instruction in antenatal care. He should spend three months as a paediatric clerk, having direct responsibility for at least four beds. One of the months should be spent in residence at a children's hospital or department. He should make himself familiar with the child welfare and other orthopaedic services of the health authorities. He should visit school medical, tuberculosis, and child-guidance clinics, and a mental deficiency institution. It is suggested that six lecture-demonstrations and discussions should be given in the third term of the first clinical year and 18 during the later period of clinical studies. They should be confined to the common diseases of childhood.

### Psychiatry: Social Medicine: Public Health

For psychiatry no set departmental course to be taken at a particular stage of the training is proposed, but a curriculum which pervades the whole clinical period. Various studies are mentioned which might be interwoven in the transition and clinical periods so as to give a more coherent and intelligible idea of the mental aspect of medicine than is given at present. One of the defects of present-day teaching in psychiatry is that too much is left to registrars and teachers of similar status. The introductory course should include a series of 12 lectures on the general principles of psychopathology. Two further series, each of 12 lectures, should be arranged in the first and second clinical years respectively. Some of the time of the lectures might be devoted to discussions of the Socratic type concerning difficulties encountered by the student in his reading or clinical experience. It is not necessary to take an in-patient clerkship specifically in psychiatry; both the psychiatric and the physical aspects of disease should be included in the medical clerkship. Out-patient work and case-taking form an important part of psychiatric training, but these should not begin until after completion of medical clerking and surgical dressing in the second clinical year. Six attendances at psychiatric out-patient clinics are recommended. Some time should be devoted, with the co-operation of the paediatrician, to children's sessions. Extramural visits should include institutions for mental defectives, the observation ward of a psychiatric department or mental hospital, and a mental hospital itself. A special professional examination in psychiatry is not favoured; one or two questions in the papers on medicine should be primarily psychiatric in scope.

Instruction in the preventive aspect of disease should be given, by emphasis, by all teachers throughout the clinical period. Students should be encouraged to regard the patient and his environment as a whole. Every hospital ward will contain some patients who will serve as suitable tests for the discussion of the interrelationship of disease and social circumstances.

In the systematic course the following headings are suggested:

*Transition Period.*—History and social causes of disease; nutritional requirements of a working population; psychological reaction of patient to environment.

*Second Clinical Year: First and Second Terms.*—Natural history of tuberculosis; social pathology of rheumatic fever; venereal disease as a social problem; maternal and infant mortality, etc.

*Second Clinical Year: Third Term.*—Progress of public health; epidemiology of diphtheria, etc.; public health bacteriology; environmental health services.

During the second clinical year also the functions of the school medical service might be taken with paediatrics and psychiatry. Industrial diseases and medical supervision in factories might be taken during the same year as field work at different times. The appointment of a professor of social medicine will not be practicable at every medical school, but

there should always be a member of the staff available and competent to organize the teaching of the subject.

Industrial medicine should be taught as a special aspect of social medicine, not as an independent subject. A systematic course of lectures might deal with the following: history of industry; occupational disease and mortality; the Factories Acts as a contribution to a positive health programme; practice of medicine in industry; rehabilitation and resettlement. Here again a separate examination is not recommended. Examiners in general medicine should expect the student throughout his answers to have regard to social, occupational, and economic factors in illness.

A brief chapter on forensic medicine discusses the bearing of medico-legal problems on the medical practitioner. Here again at present too much attention is given to details which should be the province of the expert. "It is unnecessary to burden the undergraduate student with detailed instructions in the conduct of such post-mortem examinations as may be required by a coroner." Toxicology should be taught from the clinical point of view. It is not considered necessary for the toxicologist to have charge of beds for teaching. The most suitable time to present forensic medicine is in the summer preceding the final year. Practical teaching should be supported by systematic lectures occupying about 20 hours. Two lectures on medical ethics and the legal responsibilities and duties of the general practitioner should be included.

### Specialties

These, in view of what has already been stated, are treated very briefly.

*Ophthalmology.*—Criticisms by those in charge of eye departments in large hospitals arise from cases which exemplify (1) failure to diagnose intraocular disease and delay in referring cases to specialist; (2) attempts to treat serious eye diseases before so referring; and (3) failure to assess correctly the value of ophthalmic examination as an aid to diagnosis. The inference is that many practitioners have not received an adequate basic teaching. The aim should be to give a thorough grounding in "anatomical diagnosis" without necessarily attempting "pathological diagnosis." A clinical class should not exceed five students. (24 lectures.)

*Ear, Nose, and Throat.*—Technical skill in use of nasal speculum, laryngoscope, and otoscope, and the simple clinical methods of examination and treatment, should form part of the equipment of every general practitioner. The student might attend out-patients during his second clinical year. (24 lectures.)

*Dermatology.*—In the transition course six to eight lecture-demonstrations on clinical examination of dermatological cases should be included, and instruction in clinical dermatology given in the second and third clinical years, organized as a curriculum rather than a set course. Later in the second year he should study skin cases in wards and the out-patient department. (24 lectures.)

*Venereal Diseases.*—Twelve attendances at the V.D. clinic for lectures, demonstrations, and practical work should suffice to cover the ground for the undergraduate. (6 lectures.)

*Physical Medicine.*—A list of topics to be covered in an elementary fashion is given. The course should not include general discussions on osteoarthritis, fibrositis, or gout; these are rightly in the domain of general medicine. (8 lectures.)

*Radiology.*—A special course for teaching scope and methods. It is unnecessary to learn special techniques. Conferences and discussions on selected cases between consultant, radiologist, pathologist, and any interested specialist are valuable methods of teaching. (9 lectures on radiodiagnosis, 3 on radiotherapy.)

### Examinations

The Committee rejects the view that examinations are unnecessary and undesirable for the medical student: well-designed and well-conducted examinations are an essential part of the machinery of education. It favours the internal method, but with an associated external examiner. The final examination should be devised as a whole, without separate papers in the specialties. After the examination in general pathology at the end of the transition course—that is, in the July of the student's third year—he should not be required to undergo any further examination until he has completed the full curriculum, thus leaving him two and a half years, unhampered by the examination burden, to absorb the principles and ideals of medicine as a single integrated study. The final examination may, for practical convenience, be divided into the three main subjects, but the parts must not be regarded as separate obstacles to be surmounted one at a time.

A special committee of internal examiners in all subjects should undertake the general organization, review the proposed questions, decide the standards for the allocation of marks, and afterwards review the results. The paper on general medicine should be the responsibility of the professor of medicine; there should be no papers in the specialties, but some questions should be devised which the candidate will be unable to answer satisfactorily without an adequate knowledge of one or more specialties (e.g., "A man of 60 wakes in the morning with a right frontal headache. Discuss the differential diagnosis"). The clinical examination should take place in hospital rather than in an examination hall in order to give a wider choice of cases. A healthy person might be assigned to a candidate in the clinical examination, but the candidate should be forewarned of that possibility. The following precepts for examiners were formulated by one witness, and the Committee endorses the advice and underlines the fourth precept:

(1) Treat the candidate with the courtesy which is his due.
(2) Do not flatly contradict any candidate.
(3) Try to find out what the candidate really knows. If you discover a serious lacuna there is no need to plumb it to its depth.
(4) Be prepared to receive views with which you may not agree so long as they are accepted by teachers of repute.
(5) Put your questions clearly.
(6) Be careful how you joke with examinees.

### The Intern Year

The idea of including a period of clinical experience under supervision as an integral part of the training of medical students was first put forward by the B.M.A. Committee in 1934. The Goodenough Committee elaborated the proposal, to which effect has been given in the draft Medical Bill submitted by the General Medical Council to the Minister of Health. On the ground that they all belong to the compartmental system, against which the whole Report is directed, the present Committee objects to various forms of internship suggested, including the Goodenough recommendation of one appointment for six months in general medicine and another of like period in general surgery. The intern year should complete the student's basic training by introducing him to the responsible care and treatment of patients, with a gradual increase in personal responsibility. The intern should be assigned both in-patients and out-patients as they are admitted to hospital.

"The intern will thus receive the patient as a sick person, and not as a 'medical' or 'surgical' case, and at least six months will be devoted to this integrated study of patients and not be divided into 'medical' and 'surgical' appointments. Such labelling prematurely attunes the student's mind to a particular diagnosis."

Each patient admitted to hospital would be assigned to an intern, who would be responsible for writing the history and for the minor laboratory examinations and technical procedures, would be present at all consultations, would glean the social background, note the progress of the patient, and undertake the follow-up. He would really act as the personal doctor of the patient and be even closer to him than the attending physician or surgeon.

It is estimated that an approved hospital should be able to take one intern for every 20 to 25 beds, and that it should not be necessary for any one hospital of 250 beds to have more than 10 interns at a time. This means that, with an annual admission list of 6,000 patients staying on the average two weeks, each intern would have 10 new patients a week for study. The student should be paid an adequate salary during his internship. At the end of his intern year he should not have to undergo an examination, but for the purpose of admission to the *Register* an officer of the approved hospital should be required to certify, through the qualifying body, that the student has satisfactorily completed his intern appointment.

The final recommendation of the Committee may ultimately prove to be the most fruitful—that there should be an Association of Teachers in Medical Schools to keep in continual discussion the various experiments in medical education and to plan an assault on the many problems yet unsolved.

## MEDICAL ART SOCIETY EXHIBITION

[FROM A SPECIAL CORRESPONDENT]

Is there such a thing as an "amateur artist"? There are public figures like Mr. Churchill, and busy professional men like Sir John Parkinson and Sir Philip Manson-Bahr, who manage in some inexplicable way to find time to paint, and to paint as competently as any professional. But there cannot be two standards for art, and it would be sheer condescension to judge the medical artists now exhibiting at the Walker's Galleries, 118, New Bond Street, by any artificially lowered standard.

It is pleasant to see that so many well-known and busy members of an overworked profession have time to bring out their easels to such good effect. For example, besides Sir John Parkinson and Sir Philip Manson-Bahr, the list of artists includes such names as Dr. H. S. Stannus, Dr. Geoffrey Bourne, Dr. W. S. C. Copeman, and Mr. Holmes Sellors.

On the whole the tendency is towards the orthodox and academic, but this is to be expected. There are, for example, some extremely competent etchings by Dr. E. Goodwin Rawlinson and Dr. E. Puddy. The best of the more traditional water colours, because the least fussy, is Dr. Charles R. Porter's "River Congo, Rainy Season," although Sir John Parkinson's "Glacier Stream" is architectural in its treatment of a mountain set against a flat foreground, and Dr. Henry Wilson's "Scarborough Bay" has a quiet sense of colour. Dr. Dorothy Hare's studies of trees are observant, though perhaps Dr. L. E. Houghton's "November" has a more sensitive feeling for atmosphere. Mr. R. W. Payne has a pleasant style of his own; his drawing is meticulously childlike, and he uses bright, flat colours with pleasing effect. Sir Henry Bashford has contributed two extremely interesting studies in grey wash: "Rock Pool" is a highly original and effective design, and more successful than "March Study—Hampstead."

The best of the water colours, however, are Dr. C. J. Dudley-Dunn's "Village Roofs," and, more particularly, a charming and naive painting by Dr. J. D. W. Pearce called "Positano." I should be surprised if the unaffected colouring and drawing in this little scene of houses grouped on a hill were derived from any "cult of the primitive"—it looks spontaneous and genuine.

The oil paintings show more evidence of lack of leisure and skill, although there are some good things among them. For example, three charming paintings by Dr. Helena Wright are spoilt by a certain muddiness ("Bathing Beach, Taormina," with its scattered sunshine, is the best). Dr. Margaret Little's "Mynydd Bach," a study of red- and blue-roofed cottages against green hills, is not quite successful for the same reason. Dr. Edith Magill's painting of a scene near Stockbridge is more successful because it is less ambitious, and her colours are better controlled. Dr. Christopher Keating shows good plastic sense, especially in the sturdy treatment of the white cottage in the foreground of "The Canal." Dr. Norman Patterson has treated "Springtime in My Garden" extremely delicately. The most interesting oil painting is Dr. Lorna King's "Landscape." It is reminiscent of some of Banting's paintings (which the writer has seen in reproduction only). The colours are subtle, the plastic sense and design well developed, and the whole painting looks as if it has been really seen, and not painted through the eyes of somebody else.

Among the oil paintings are the two worst pictures in the exhibition, Mr. Geoffrey Parker's "Nightmare" and Dr. C. M. Ruben's "The Paths of Glory lead but to the Grave." These two symbolical paintings are not relieved even by good draughtsmanship.

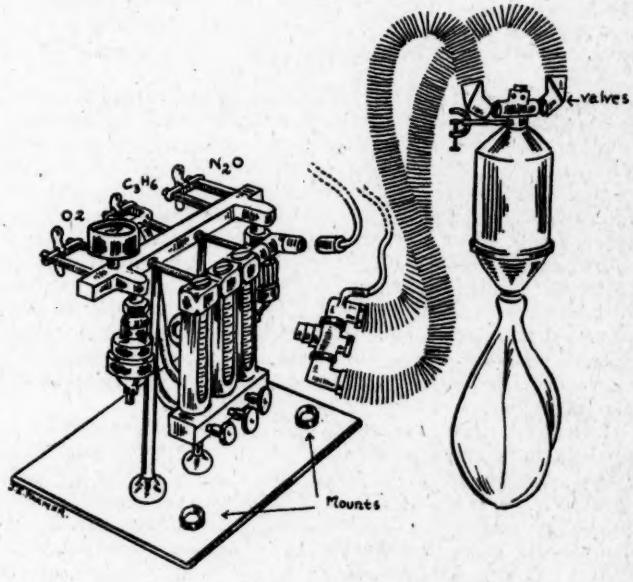
The few items of sculpture are competent. The most interesting is a plaster-of-Paris cast of "A Doctor's Face" by Dr. S. Hales. It looks as if it might have been a mask made direct on the model, and it suffers from a lack of artistic form; but the expression is interesting.

The exhibition contains a succinct commentary on the present medico-political situation. Dr. E. Puddy's "Quo Vadis?" shows a doctor sitting at a desk crammed with sheaves of official papers and regulations, among which can be seen the familiar panel cards; in front of him a poor, stooping patient, cap in hand, waits pathetically, and behind the patient stands Christ with outstretched hands.

# Preparations and Appliances

### A PORTABLE ANAESTHETIC APPARATUS

Dr. G. E. HALE ENDERBY, Anaesthetist, Royal National Orthopaedic Hospital, writes: This apparatus has been designed to meet the need of a compact reasonably portable machine providing facilities for the administration of most anaesthetic agents. There are two main sections of the apparatus. One is the flowmeter-cylinder unit carrying oxygen (15 gal.), nitrous oxide (50 gal.), and cyclopropane. The other is the circle-type absorber, which is a Waters canister fitted with a specially designed head incorporating directional valves. This enables the use of twin tubes, and the canister can be fixed in any position in relation to the patient. It is usually attached beneath the operating table by a screw clamp as described by James (*Journal*, 1947, 2, 345). The directional valves (rubber flaps) are mounted in detachable angle-pieces carried on the ends of the corrugated tubes. This facilitates washing, and sterilization if necessary. The absorber unit can be replaced by a continuous-flow Magill rebreathing attachment for use with nitrous oxide, oxygen, trichlorethylene, and ether if desired. The trichlor-




ethylene is used in an M. and I.E. bottle, and the ether in a Magill drip. Both these are carried as accessories for attachment to the flowmeter unit, and are not permanent features of the machine. No direct provision is made for the use of carbon dioxide. A supply is carried in a C-type sparklet bulb with an attachment which fits the cyclopropane yoke. This is inserted in place of the cyclopropane cylinder when required. Mounts on the baseboard carry the Waters canister and a face mask when not in use. The whole apparatus fits into a carrying-case having a central compartment for the apparatus and narrow compartments at each end for hosing, rubber tubing, etc. The central section is fitted with a shallow tray for accessories.

My thanks are due to the skill and patience of Mr. Childerhouse and staff of Medical and Industrial Equipment, Ltd., New Cavendish Street, London, W.1, who made this apparatus for me; and to Miss Farmer, medical artist, Rooksdown House, Basingstoke.

# Reports of Societies

## ELECTRO-NARCOSIS

In the Section of Psychiatry of the Royal Society of Medicine on May 11 a discussion took place on electro-narcosis.

Dr. SPENCER PATERSON, who showed a film of the treatment being given to patients in the Psychiatric Unit of the West London Hospital, said that about two years ago, in different countries and in different hospitals in the same country, there were being passed through the brains of patients electric currents which differed from each other in every particular; there had been little experimental work to show which were safe and which were dangerous. There were many psychiatric conditions which failed to improve when the patient was given only two or three applications a week, but it had been discovered that the more intense administration of electric shock could effect recovery in otherwise intractable cases. The side effects were not serious, but careful nursing was often necessary. It was therefore sought to obtain a better therapeutic effect with little or no discomfort to the patient, and to this end the passing of a low current through the brain of animals for a period of several minutes was studied.

The main difference between the electro-narcosis machine and the electro-shock machine was that with the former the current was kept automatically regulated. Instead of the sudden agitation of the brain cells, a more gentle application was obtained by allowing the current to rise to its maximum over a period of 3 seconds. Curare was also used in advance of the electrical application and had the effect of diminishing the violent movements of the patient. Electro-narcosis was generally given three times a week for about eighteen times. Sometimes if the patient was quite well after ten or twelve applications the treatment was stopped, but there was less likely to be a recurrence if it was given for a greater number of times. If the patient showed undue memory disturbance it could be given only twice a week. With a colleague he had given altogether 719 treatments, from 9 to 20 for each patient.

The previous history of every patient was elicited. If he was sufficiently robust to tolerate electro-shock it was likely that he would be able to have electro-narcosis, especially with curare. One generally had to wait 3½ minutes between the curarization and the onset of electrical treatment in order that the drug might take effect. An electrocardiogram was always taken before treatment. The chief complications were due to saliva and mucus and might be prevented by atropine 1/6 gr. (11 mg.). Sometimes white ropy mucus collected in the back of the throat. He had heard of cases of lung abscess following electro-shock. Sometimes the patient complained that he had become conscious during the treatment. This experience might be very frightening; the patient might feel suffocated and also see bright flashes of light or hear loud noises.

Except for small and young patients it was rare to give an application of less than 200 mA. for the last 30 seconds. The blood pressure should be taken several times during the treatment of a patient. A pressure which had been normal at first might rise as high as 260/160 mm. Hg. Sodium amytal was more likely to keep down the blood pressure than pentothal, but it had the disadvantage of taking a little longer to act. Occasionally the following symptoms occurred temporarily after treatment—headache, lassitude, and a sense of constriction around the chest. There might be some amnesia. Often, however, the patient experienced no discomfort whatever.

Up to three months ago 35 schizophrenics had been treated with electro-narcosis in his unit. The cases fell into three groups. There were 9 cases in which there had been a previous schizophrenic episode, from which they had recovered, and after electro-narcosis for this later attack 8 of these patients were back at work within three months and only one was not improved. The second group consisted of 10 patients who had been ill for less than twelve months since they were first seen, and of these 9 returned to work. The third group consisted of 16 patients who had been ill for more than a year when first seen, their average duration of illness being 3.2 years, and of these 4 made a complete recovery, 3 more were able to return to work, and the other 9 were greatly improved.

Comparing the results of electro-narcosis with those of electro-shock, Dr. Paterson said that the effect of electro-narcosis in cases of schizophrenia was comparable with that of an intense course of electro-shock, but he believed that electro-narcosis produced a better result whilst at the same time causing less physical strain. He had treated 14 cases of schizophrenia by electro-narcosis after electro-shock had failed; in 9 of these the response was more favourable with electro-narcosis, and in 6 of them electro-narcosis brought about recovery. But it was likely that the previous electro-shock had helped the electro-narcosis, as there was perhaps a synergic action between the two. Electro-narcosis was in one respect safer than insulin coma therapy, for if the patient appeared to have undue cardiac or respiratory difficulty the current could be switched off at once, whereas with insulin coma it was more difficult to stop the effect.

In 16 cases of depression treated with electro-narcosis 12 showed complete recovery. In 8 cases of severe psychoneurosis there were two striking recoveries. It was important to treat these patients as soon as the morbid state was manifest—a fact borne out by the larger proportion of successes with the early psychotic cases. Among the hundreds of cases treated no patient had complained of being worse after treatment. He believed that electro-narcosis and kindred treatments were only at their beginning. Full investigations were being carried out at the West London Hospital and elsewhere, including psychological tests before and after treatment.

### Results in Schizophrenia

Dr. W. L. MILLIGAN described the treatment by electro-narcosis of 120 patients at St. James's Hospital, Portsmouth. These included 70 cases of schizophrenia, 15 of acute schizophreniform reaction, 10 of periphrenia, 10 of melancholia, and 15 of psychoneurosis. If the treatment was carried out properly the patient did not recall any unpleasant sensations. Approximately 2,500 treatments had been given, and, except in the periphrenic group, no patient had refused to continue. Many impartial observers had commented on the cheerful and composed manner of patients awaiting perhaps their twentieth treatment. Especially in cases of schizophrenia it was essential to give at least 30 treatments before assuming that the therapy was not producing the desired results.

Of the 70 schizophrenics treated 44% showed complete remission and a further 17% showed social recovery. Only 14% were not improved. If children, with whom the treatment was almost invariably unsatisfactory, were omitted from the group, the percentage of remissions among the 60 adolescents and adults was 52% and of social recoveries 20%. The duration of illness was an important factor; all the 7 schizophrenics with a history of under one year recovered completely, as did 15 of the 17 whose illness had lasted between one and two years. He agreed that the duration of follow-up had not been sufficient, but in no case had it been less than three months, and 40 cases had been followed up for between a year and twenty months. Atypical schizophrenics responded well, and good results were obtained with the 10 melancholics. Electro-narcosis was a much smoother form of treatment than electro-shock, and one had more confidence in applying it, especially to the elderly patient. The modified method consisted, in the first stage of electro-narcosis, of raising the current from zero to 180 mA. in roughly two seconds; after remaining at that height for 30 seconds it was very slowly brought down. The idea was to cut out all evidence, if possible, of the clonic stage. Convulsion was modified to such an extent as to be no longer noticeable. He thought it could be reasonably claimed that electro-narcosis formed a useful addition to their armamentarium.

### Curarization of the Patient

Dr. GERALD CAPLAN reported on a modification in the technique of electro-narcosis which he had worked out recently with the help of the anaesthetist, Dr. Samuel Carden. The apparatus which he had designed was similar to that used by Dr. Spencer Paterson and Dr. Milligan. It was a small, light-weight apparatus weighing 8.6 kg. and incorporated a non-thermionic current stabilizer. A special feature was the inclusion of a voltmeter which allowed a continual check to be kept on the resistance

of the external circuit. If the electrode resistance increased suddenly owing to inadequate contact with the skin of the patient this would be immediately shown by an increase in the voltage output. This was an important safety device to prevent skin burns. The modification in technique worked out with this apparatus was designed to ensure satisfactory oxygenation of the patient throughout the course of electro-narcosis. Insufflation with oxygen in the later stages of electro-narcosis was difficult because of spasm of the glottis, which manifested itself as the inspiratory stridor. This was considerably reduced by partial curarization of the patient. Three minutes before electro-narcosis was started the anaesthetist gave an intravenous injection of pentothal sodium 0.3 to 0.4 g., plus atropine 1/60 gr. (11 mg.) and *d*-tubocurarine 12 to 15 mg. Immediately afterwards he began the administration of pure oxygen and continued this throughout the treatment. The amount of curare given was not sufficient to prevent the muscular movements which were an important sign of the depth of the electro-narcosis, but damped down any convulsive or preconvulsive movements which might produce fractures and also caused sufficient relaxation of the vocal cords to allow of adequate oxygenation. Occasionally, when the initial current dosage was not correctly estimated, there was a delay in the reappearance of the patient's spontaneous respiration. With this technique this need not cause anxiety, as the patient could be kept pink by insufflation with oxygen by means of intermittent manual compression of an ordinary anaesthetic bag. On several occasions the patient had been kept in a satisfactory state of oxygenation despite the fact that he did not breathe spontaneously throughout the whole seven minutes of his electro-narcosis. In addition the pentothal injection removed any apprehension due to the curarization, and was also a sufficient safeguard against the troublesome complication of an inadequate electro-narcosis, for which the patient preserved a partial memory.

Mr. GREY WALTER said that the literature of electro-narcosis was immense and bewildering. About eight years ago they were anxious to determine the margin between the maximum therapeutic dose and the minimum lethal dose of current, and evolved an experiment similar to those described by the openers. The experiment was interesting, and it seemed to those concerned as if they were watching the cerebral activity under a large stimulus from outside. He was rather bewildered by the term "electro-narcosis" as descriptive of the procedure outlined in that discussion; he would have thought the term "electro-delirium" more suitable.

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## ENDAURAL TEMPORAL BONE SURGERY

### DR. LEMPERT'S LECTURE

Dr. JULIUS LEMPERT, of New York, delivered a lecture at the Institute of Laryngology and Otology, London, on May 8 on "Endaural Temporal Bone Surgery and the Philosophy of its Evolution." The lecture held the interest of a crowded assembly for two hours, and Dr. Lempert was given an ovation at the close.

Thirty years ago, said Dr. Lempert, when he began the practice of otology, he was not satisfied with the results he obtained in temporal bone surgery. One of the problems was obstructive exostosis of the external auditory canal. The accepted procedure was to do a mastoidectomy, breaking down the posterior wall of the canal, a method which destroyed far too much healthy tissue and sometimes resulted in intracranial complications. He set about finding a way of doing this operation without destroying the mastoid process, and that was the beginning of his endaural surgery. He demonstrated his method of making an incision and lifting slowly, a few millimetres at a time, the skin and periosteum from its attachment to the bony surface. Then, with a small electrically driven burr, he removed as much of the exostosis from the posterior wall as possible, and continued to elevate the skin and periosteum until he reached the tympanic ring, gradually removing the mass wherever found, and so down to the anterior mastoid cortex, without opening any of the mastoid cells. This was a most satisfactory procedure both for otologist and patient; it could be carried out under local or general anaesthesia, and the stay in hospital need not be more than one day.

#### Mastoidal Tympanectomy

Another problem of those early days was post-auricular fistula, and in treating this it seemed inevitable that another deformity should be created. He tackled this also endaurally, along the anterior margin down to the bone through skin and periosteum, and again with a periosteal elevator slowly raising the auricle in a posterior direction. He everted the funnel of skin and periosteum and immediately had more tissue than he needed to correct the post-auricular fistula. The excess skin and periosteum, together with any infection within the region, was removed with the curette; one or two sutures with drainage completed the procedure, and at the end of about five days there was a perfectly healed area.

Why did fistula follow surgery of the temporal bone? A radical mastoidectomy could not be done through a post-auricular incision, and therefore it was necessary to go ahead and destroy the external auditory canal. There was unnecessary destruction of tissue, undermining the whole foundation of the auricle, and as a result post-auricular fistula occurred. Dr. Lempert described his method of performing what he called mastoidal tympanectomy. The method was based on the principle of exposing the antrum to direct view. "Anything you can see, you will not hurt, but you must be able to see it." Instead of approaching the antrum from within the confines of a sclerotic temporal bone, from without inward, and working blindly in the hope of avoiding this or that structure, he worked from within outward, with no danger of injury, obtaining a proper exposure of the antrum and removing the pathological process within the middle ear.

If the structures involved were not to be injured, proper lighting was necessary. The otologist must get out of the habit of using the ceiling light in performing temporal bone surgery; an electric head-light must be employed. A magnifying glass should be worn for two reasons, firstly because the disease process could not be removed completely unless the field were enlarged two or two and a half times to enable the surgeon to see what he was doing, and secondly, because "you will see for the first time how beautiful the antrum is."

The removal of granulations or polypi from the middle ear was not sufficient to stop a chronic discharge. For twenty years there might have been an infection in the middle ear, with the result that the lining membrane was infected. The peri-eustachian tube cells which were infected must be removed, but a curette must never be introduced into the eustachian tube itself, for this was likely to result in osteomyelitis of the bony portion of the tube. Dr. Lempert indicated in great detail with a series of lantern slides every aspect of this procedure, and said that if this course were followed the chances of getting a dry ear were 100%, "provided you do not delegate the after-treatment to some young intern."

#### Accidents at Operation

When an otologist injured the facial nerve while doing a radical mastoidectomy and did not know it, but had to be told by his anaesthetist, "The face is crooked," he should not be doing temporal bone surgery, because he did not know where he was in the temporal bone. Accidents happened to anybody, but the skilful surgeon would tell the anaesthetist long before the anaesthetist told him. He will say, "Will you look at that face? I have just injured the facial nerve."

The most usual facial nerve injury was caused by the fracture inwards of a little piece of bone into the fallopian canal, compressing the nerve. This could be readily observed, and it took less than a minute to remove it. When the facial nerve was torn and a piece was missing it was another story. Here he demonstrated how he removed the facial nerve from its canal, converting the curved line into a straight line, and suturing the nerve end to end.

#### Endaural Simple Mastoidectomy

Years ago, when many simple mastoidectomies were done for acute suppuration one of the problems was that, after operating successfully on a small child, the child would turn up six months or a year later with a ballooned-out post-auricular scar. This was an inflammation of the scar which required incision and drainage, and that was all. But if instead of

going to the surgeon who had performed the original operation the child was taken to a colleague, the case was liable to be pronounced one of recurrent mastoiditis. When a middle ear infection occurred in a healthy bone that had never been operated upon the course of least resistance for the infection was the tympanic membrane; this might go on to rupture or it might be seen in time by an otologist and incised and drained. But when the child once had a mastoidectomy performed and, following it, had a middle ear infection, the course of least resistance was no longer the tympanic membrane but backwards to the mastoid wound, the resistance of scar tissue being much less than that of healthy tissue.

It then occurred to him that if he performed his simple mastoidectomy endaurally it might be impossible for this to happen, because there would not be a post-auricular incision, and the inflamed scar ballooning out would no longer be seen. He had now been performing endaural simple mastoidectomy for many years. The incisions were the same as in his fenestration operation. They looked very simple, but to make them correctly so that there was proper exposure of the temporal bone required some experience. The first incision should be a straight line outwards, starting from within and coming out. Then, when the retractors were pulled, an exposure was obtained more adequate than that by the post-auricular route. In making this incision a speculum should be used and the soft parts stretched.

Dr. Lempert illustrated various other procedures, and his lecture was greatly appreciated by a large audience of British otologists.

# Correspondence

## Accommodation for Annual Meeting, Cambridge, 1948

SIR,—The Cambridgeshire and Huntingdonshire Branch of the Association is looking forward to the honour of holding the first Annual Meeting following upon the war. The organization for this Meeting has been a formidable problem, particularly in the matters of accommodation, feeding, and transport. It is very important for us to have a rough estimate of the numbers likely to attend, as soon as possible, in order that firm bookings may be made.

So far the response to the notices which have appeared in the *Journal* has been disappointingly small. We believe that this is due to the fact that very many members have not realized the importance of making early application.

I should be glad, therefore, if you would bring this point to the notice of all members of the Association.—I am, etc.,

LIONEL WHITBY,
President Elect,
British Medical Association.

Cambridge.

## Confidence in the Council

SIR,—I was delighted to read Dr. Alfred Cox's letter (May 15, p. 949). He stressed one point which, I think, cannot be too strongly emphasized. At Headquarters and at H.Q. alone can be found a true estimate of current medical opinion. For this reason it is imperative that we should place complete confidence in the Council.

I know no body of men that is not on occasions liable to attacks of hysteria. Those who have attended Representative Meetings in London will appreciate this as a fact, for, despite our training, we are just as liable to emotional crises as any other branch of the community.

I remember the hysterical outburst before N.H.I. when Dr. (later Sir James) Smith-Whittaker accepted a high executive post on the Commission. I remember it well, for my own outburst of fierce hostility to all in authority in the B.M.A. carried me on a wave of emotion into membership of the State Sickness Insurance Committee—the parent of the Insurance Acts Committee. I served for a year and learnt a very great deal.

I don't say that I am happy about the new Health Service—far from it—but I do feel strongly that we should be directed by the report of the Council and not try, each and sundry, to force our own point of view on the others. We have a lot of work ahead of us, and this work must be done by an informed co-ordinating body. We have elected a Council; we have given them certain limited powers; let us cheerfully accept their decision however much we may feel disgruntled, so that they may go on with their difficult task in the knowledge that the medical profession is solidly behind them.—I am, etc.,

STANLEY HODGSON.

Salford, Lancs.

## Goodwill

SIR,—May one who some months ago was accorded the courtesy of your columns in an attempt to offer some reasonable arguments in the present discussion about the National Health Service again request the same courtesy? One would have thought that many practitioners had by now reached the conclusions advanced by Dr. Alfred Cox (May 15, p. 949), without the necessity of his lucid and convincing survey, were it not for such letters as those you publish immediately afterwards and later in your correspondence columns.

Dr. Cox gives three good reasons against basing refusal to work the Service on forfeiture of goodwill, and is amazed to find many of us do not think this worth fighting for. If it were possible to find a general practitioner who had not been upset by the war, his experience if he came into practice at any time later than 1918 would probably be that he had to borrow the whole cost of his practice and take ten or fifteen years repaying the loan and finding interest amounting to a considerable sum, which expense he would have avoided had he been in possession of capital at the start; that during these years he acquired a family whose education involved him in some form of further loan charged, actually and in the last resort, on his practice; that as they grew up he found it expedient to buy his house, and, although that was done on a mortgage, it was the practice again which paid for it; and that between twenty and thirty years after he acquired goodwill he possessed it free from charges for loans of any kind. For the rest of his working life he really owns goodwill, which perhaps increases in monetary value through his efforts and certainly does so because the value of money is falling. And when he dies or retires his successor goes through the same cycle with a larger sum in pounds sterling to pay off on all three probable items.

I am one of those, no doubt numerous, practitioners who have every reason to be grateful to the businesses who have advanced money to buy practices; but no informed person can view with equanimity the prospect that every time a practice changes hands it is probably charged with a debt increasingly large in terms of money, or deny that continuation of this process will inevitably end in all the general practitioners of the country being in debt the whole of their working lives. Personally, that there might be a case for breaking this vicious circle first occurred to me when it was authoritatively stated, about the time the N.H.S. Bill was first adumbrated, that insurance companies and banks had an interest in about a third of the practices existent. With knowledge that the loans are ordinarily for ten or fifteen years it was easy to work out that this indicated practically all of the practices in the country which had been sold within the last ten or fifteen years, since a man may stay in a practice no more than 30 years and is hardly likely to do so more than 45.

There may have been a time when parents were able to bear the then considerably smaller cost of medical education for a shorter term of years than at present, and afterwards find the money to buy practices for their sons. If it ever existed that time is past; and, although private business enterprise has well served both the profession and the community since it ended, such a financial foundation for a profession on which the health of the nation depends is not only theoretically objectionable but within sight of becoming practically impossible. It is rather rough on a young doctor, and perhaps even rougher on a mature one whose youthful years have been passed in, say, the Arakan, to put him in a position where he has to choose between buying drugs for his patients, reboring the car necessary for their service, or repaying the instalment of capital due to the lender.

Without a complete alteration of economic tendencies, of which there is no prospect, legislative interference in the interest of the nation as a whole was sooner or later inevitable; and Parliament has decided in favour of acquisition of capital values which in known fact very largely do not inhere in the corpus of general practitioners against the alternative of State-guaranteed loans for purchase. With the continual rise in monetary value of practices and the almost universal insistence by vendors on tacking a house (for which more is asked than for the practice) on to the goodwill, no responsible Department could have recommended, and no responsible House of Commons of any political complexion could have sanctioned, the only practicable alternative.

Dr. H. Simpson (p. 950) somewhat impolitely demands reply to a question which he more impolitely answers. I beg leave to dissent from his "you know very well that you have achieved little worth while" and to say you have brought about a state of affairs which enabled myself—and from the figures you have published a good many more—who replied to the first plebiscite that they disapproved of the Act, would not work it, and would abide by the view of the majority, to conclude that they approve of the Act with the promised amendments, will work it, and will not be controlled by a majority in a decision which each doctor has been left by Parliament individually free to make. Obstetric arrangements apart, the only inequitable thing left I have been able to discover is that, where a doctor after a term of both public and private practice retires from the former and continues the latter, he is still prohibited from selling the goodwill of the latter. But this is not likely to arise in fact for some years, and by that time amendment of the Act acknowledged by the Minister as likely to be indicated by experience of its working may have in this respect altered Sect. 35.

Those of your correspondents who appear to be seriously of the opinion that retention of goodwill is essential to avoidance of full-time salaried service, and who are not convinced by your demonstration in your leading article that this danger was for the present got rid of before the Bill came before Parliament, may perhaps find some comfort in the fact that an Act of Parliament, such as that in which Mr. Bevan intends to enshrine his personal guarantee on this point, is the highest safeguard known to our law. There are, of course, safeguards in common and case law; but wherever a liberty is threatened by the executive Parliamentary guarantee is the most anyone can obtain. Although it was wrenched from a tyrannical executive before Parliaments were, Magna Carta itself is reckoned part of the statute law, and printed first in the Statute Book. Further, even those of us who are coming into the Service will retain, by the wish of our patients who do not intend to use the National Health Service, private practice; and if anyone tries to introduce a full-time salaried service we are stronger than we are now or if we stayed outside the Service. For we have only to resign to bring ourselves exactly where the man who does not join the Service is; and that, under the Act, means our capital has to be paid to us. It would be a rash Minister of Health who provoked a call on the Treasury for most of the capital sunk in practices when the Chancellor reckons on having to find this in dribblets over the next 40 or 50 years.

Finally, may I advise those who honestly want information to take the Minister at his word and write to the Department? Personal experience since this invitation was offered—and accepted—in January last has provided much concrete information of practical importance, which was of weight in reaching the decision mentioned above and communicated to you in the last plebiscite.—I am, etc.,

London, S.W.6. C. T. NORRIS.

## The April Plebiscite

SIR,—Will you permit me space in the *Journal* again in order to criticize your leading article of May 15 (p. 936), which indirectly refers in parts to my letter on p. 951 of the same issue? In my opinion this leader is well worthy of the closest consideration by all members of the B.M.A., containing as it does a series of inaccuracies and misstatements. In the light of the most recent developments it is most imperative that we should take a careful survey of all facts. On this account I desire to comment on various points in your leader which, I think, require consideration.

Your paragraph 1.—Although 13,000 G.P.s did not vote against the Service in the last plebiscite a large number did not vote at all, and I maintain that a minority vote of 36% does not by any means justify the Council of the B.M.A. advising 64% to accept the Act against their obvious inclination. Consequently, the Council has no authority to enter into further negotiations with the Minister of Health; the prospect, in any case, of our obtaining anything worth our while, once we have delivered ourselves body and soul into the Health Service, is fantastic. Dr. Alfred Cox (p. 949) may endorse your decision, but the plebiscite of doctors who will have to work in the Service definitely does not. The attitude of the general public, of which only a very small minority (and some of these under compulsion) has taken out registration cards, would suggest to me that wisdom and statesmanship on the part of the B.M.A. Council are rather lost on them. The verdict of the plebiscite is definitely *against* the Service, and the whole-hearted support of the B.M.A. should be given now, and not after we are at the mercy of the Minister of Health. Dr. Cox states we have won a victory—he means we could win a great victory were it not for this craven capitulation to State Capitalism.

Paragraph 2.—I, for one, am taking the *Journal* to task because the sudden and complete change of opinion in its leaders since April 7 requires more elucidation than has been given. I agree that the situation has changed a great deal since December, 1947, but this has been due to the medical profession only—we need give no credit to the Minister of Health for this fact. If we still stood together the situation would change still further to the advantage of doctors and public alike. The right of a doctor to choose his own partner or assistant is no concession—are we to be free men or State servants? As far as I have heard the recommended capitation rate by the Spens Committee was 23s. per head per annum, so I fail to see where Mr. Bevan has accepted the findings of the Spens Committee.

The absence of Health Centres (paragraph 3) is due to the fact that the Minister of Health cannot even build the necessary houses for the people. To begin with, the Health Centre was to be the keystone for the whole service, but now there will be no health centres, no new hospitals, and no other buildings for years to come, because they cannot be built—a rather poor foundation upon which to attempt to build a service for health, but good enough as a start to obtain control of an independent profession and the general public all at one time. Negative direction implies that a doctor may practise where he likes in under-doctored areas, otherwise it becomes positive direction—this statement in the *B.M.J.* contradicts itself. In any case, no doctor would want to go to an over-doctored area.

Paragraph 4 is a confession of failure. The medical profession has not succeeded in the question of right of appeal, it has failed to persuade the Minister to remove negative direction, it has failed to retain the ownership of one's own practice, which is of much importance to general practitioners. Yet these points could be definitely obtained if we stood our ground. The ownership of one's own practice is the only safeguard of our own professional independence and the only barrier against a whole-time salaried service, whether by Regulation or Act of Parliament, and Mr. Bevan knows it, and the B.M.A. should know it too and should insist upon it, instead of rejoicing over the few paltry concessions which have been made.

Apparently according to the last paragraph the policy of the B.M.A. does not represent the opinions of quite a large number of its members: or is the B.M.A. more concerned with a policy to please the Government than with the opinions of the doctors who pay their annual subscriptions?

If the medical profession reject the compromise it will be representing the great bulk of public opinion as I have found it, and as is shown again by the very small number who have registered. The general public realize this is only another step in a series of controls and regimentation, and in this district the overwhelming majority are bitterly disappointed at the suggestion that the doctors should join the Service. The B.M.A. is either out of touch with public opinion or is ignoring it. The wisdom of the B.M.A. Council may not be as widely acclaimed as the B.M.A. seems to imagine, but will certainly be endorsed whole-heartedly by Mr. Bevan and his satellites in the B.M.A. The Minister of Health will be delighted to have got his own way with so little difficulty. Finally, the suggestion that the B.M.A. will receive enthusiastic support in the moulding of the National Health Service from a profession which is at least 64% against it, and forced into the Service against its will, is so obviously ridiculous that one is surprised that it should appear in the pages of a journal which apparently claims to represent professional strength and wisdom.—I am, etc.,

Kirriemuir. J. MCINTOSH RATTRAY.

*** We suggest that the elucidation Dr. Rattray seeks is in the first principle enunciated by the Negotiating Committee in 1945: "The medical profession is, in the public interest, opposed to any form of service which leads directly or indirectly to the profession as a whole becoming full-time salaried servants of the State or local authorities." The Government's promised Amending Act is to make it impossible to introduce a whole-time service under the National Health Service Acts of 1946 and 1947.—ED., *B.M.J.*

## Abject Surrender

SIR,—I feel impelled to write to protest at the abject surrender of the Council of the B.M.A. following the result of the third "panic" plebiscite. I do hope you will publish this letter, as it expresses the feelings of disgust, disillusionment and disappointment of all the doctors of my acquaintance to whom I have spoken, and also the general public. I have had my suspicions of Council ever since they decided to "negotiate" against the expressed will of the profession (first plebiscite). They have consistently underestimated the man with whom they have had to deal. They have insisted on conducting the fight in a "kid-glove" manner.

Largely by the efforts of local B.M.A. Committees, assisted by occasional addresses by members of Council above suspicion, and latterly by the Minister himself as a result of his speech to the Commons shortly before the second plebiscite, the profession attained the surprising and exhilarating 90% unity. The Minister then changes his tune. He requests a meeting with the profession's representatives. He talks nicely and politely to them—in the main. He promises them jam to-morrow, in the form of a few illusory concessions, all after July 5 of course. Even the most naive among school-children would not have been deceived. But the effect on the Council is astounding. A new plebiscite is ordered, results to be back within the week, later extended, but still not enough for mature thought on such a vital and far-reaching decision on our whole future.

Are the Council really surprised at the result? And why should it have taken seven hours to assess the consequences? And did they still retain their kid gloves during the whole seven hours? And why should the S.R.M. have been postponed to such a late date as May 28, a bare five weeks before the appointed day? I and many others think the profession is entitled to an explanation.

The Council appeal for continued unity in the profession, having done their best to destroy that unity. How can unity possibly withstand this base treachery and sabotage? Time is short, but I suggest that at least 26,000 of us are still waiting for a lead, and even now are ready to go on fighting. Are they to be left in the wilderness to fight out their own battle as between conscience and finance? Council should resign immediately. The fighting element in it (which is considerable and the individual members known to the profession) should form a nucleus for a new Council, pledged to carry on the battle until true victory is won. Only by so doing can they possibly redeem themselves and save the profession, which they have so often reminded us constitutes the last line in the battle for freedom.

Finally, public opinion, in so far as they ever did have an opinion, is not against us. They are just frankly disappointed that we have gone, or are going, the way of all flesh when confronted by this Government. Public opinion, Socialist or Opposition, will always applaud a fight for the right.—I am, etc.,

Wolverhampton. A. E. ROBERTS.

## Division in Profession

SIR,—It is refreshing to read words of wisdom from the pen of Dr. Alfred Cox (May 15, p. 949), and as a debtor to him following the first world war I would naturally wish to support his contentions, but the comparisons with the National Health Insurance alluded to in his letter are so wide that one cannot but conscientiously criticize. The National Health Insurance involved only a portion of the people, whereas the new National Health Service is comprehensive and may possibly leave very few doctors with any alternative to joining the new service. Dr. Cox justly admits a Pyrrhic victory in that attempt to gain the *chief security* against a whole-time service—namely, the right of private property in the practice goodwill—has been a failure, and still he advises acceptance and pleads for unity in the profession. When there has been such a division in the views of the profession, as evidenced in the last precipitate plebiscite, how is it possible to obtain it, or even expect us to remain united?

The B.M.A. has failed to remain a truly democratic institution. To acquiesce to the minority savours more of the totalitarian State, and to virtually ignore the consultants and advise acceptance by them of unknown terms must surely create a precedent unheard of in the long history of British medicine. The B.M.A. must now face the consequences of its guilt, and a break in the ranks of the Association, although perhaps deplorable, may unfortunately be inevitable.—I am, etc.,

Hull. R. BERTRAM BLAIR.

## Income in N.H.S.

SIR,—Is it not time for us to learn more about the financial prospects under the Act? One has heard vague statements of a capitation fee of 17s. 6d. to 20s.—deduction from the pool being uncertain. The "ordinary man" may not be very clever, but he does know how far his pound note goes nowadays; and the ordinary doctor realizes that Mr. Bevan's assumption that he can deal with 4,000 patients with satisfaction to the patients and himself is quite fallacious. In favourable circumstances an exceptional individual might reach a limit of 2,500.

Under the present conditions there will be no reduction of expenses for the G.P.: he will still have to maintain his house, surgery, car, etc. Must the profession continue to ignore financial facts and pretend income is unimportant?—I am, etc.,

Sevenoaks, Kent. J. FINLAY ALEXANDER.

## Medical Trade Union

SIR,—We have got into a dreadful muddle, and though the nation as a whole is suffering from unsound-mindedness coupled with much "go-getting" by professional politicians we of all people should try not to give way to an excess of emotion in our plight. We were doomed as a profession of free men when the Coalition Government agreed that the whole nation should be insured against accident and illness, and our negotiators presumably agreed to this. The Bill went through both Houses, as far as I can recall with practically no opposition inside or outside Parliament. Our representatives and ourselves then suddenly woke up to our plight—too late. Now there is nothing more to be done about State medicine. On July 5 we shall be all State doctors or give up practice, and we who will work the Act will be paid a salary no matter what we call it.

We face a great deal of negotiation on this salary and on our compensation and our terms and conditions of service. For this I hope the personnel of our negotiators will be considerably stiffened. We must realize fully that we have to deal with what can only be called the trade union mentality, and I am not at all sure that we shall be able to do this until the B.M.A. transforms itself into a properly constituted trade union affiliated to the T.U.C. and with all the rights and privileges of a legal trade union.

It is my humble opinion that until this is done our terms and conditions of service will be intolerable. It is nothing short of calamity that the medical profession has become involved in politics, but there is the fact, and there is the further fact that trade unionism governs politics and is likely to continue to do so until the full establishment of the Communist State or the extinction of trade unionism, as it exists to-day, through other circumstances.

As a disjointed association of 50,000 men the B.M.A. has no political standing or prestige, while as a profession none have greater. This state of affairs must be altered. Dr. Dain as the President of the Medical Professions Union duly affiliated would be quite a different proposition to any Minister of Health—even Mr. Bevan—to Dr. Dain as Chairman of the B.M.A. Council.

May I end by suggesting that £300 p.a. and 15s. capitation fee will be gross underpayment for what we shall be asked to do in the conditions which obtain to-day? As far as I personally am concerned my work will be doubled and my income will remain what it is to-day, and I imagine this will be the fate of most G.P.s—I am, etc.,

St. Osyth, Essex. R. E. CLARKE.

## Position of Assistants

SIR,—I was pleased to see the subject of assistants promoted from the *Supplement* to the *B.M.J.* proper. I agree with all that has been said, and I would like to lay down some tentative rules. In the first place, no doctor paid to teach an assistant should be allowed to increase his list. In the second place, any assistant employed for more than one year should be either guaranteed a partnership or else freed from his bond not to practise in the district. In the third place, any promise of a partnership should be registered with the B.M.A., and a breaking of that promise be liable to financial compensation *and* the right to practise in the same district.

On a basis as outlined we would have real professional status for assistants, and the old sweated-labour principle would no longer obtain. As a profession we might then claim to live up to the principles we allege we believe.—I am, etc.,

Stoke-on-Trent. DUNCAN BAXTER.

## B.M.J. Leaders

SIR,—At a meeting of this Division held to-day a resolution was adopted unanimously instructing me to convey to you our congratulations on the recent editorials dealing with the National Health Service Act. In our opinion these articles have been extremely fair and lucid. We consider they have shown a realistic and common-sense attitude throughout and have enhanced the value of the *Journal* considerably in the eyes of those who are neither "die-hards" nor "eviscerates."—I am, etc.,

ALEX S. WILSON.
Spalding, Lincs. Hon. Sec. Holland Division.

## Suspend N.H.S.

SIR,—This day's issue of the *Journal* contains letters which surely would—*must*—convince any reader of the support you would have in return for your strongest urging to keep out of the Service. There is still time. Should the profession now agree to serve, it will, as I said at a recent meeting in Chelsea, be guilty of cowardice and of being accessory before the fact of the introduction of an Act which is contrary to the best interests of the people. Now this is what we have been claiming all along. How then can we consent to serve and yet be held guiltless of betraying the people?

At the meeting to which I have referred I said that if this Government without a mandate from the electorate for the express purpose suspend the operation of the criminal code against offenders who had been committed to the gallows for a period of five years, our profession ought to advise them to suspend the introduction of the proposed N.H.S. for a similar period or an appropriate time, during which the profession would only too gladly offer to co-operate with Mr. Bevan in devising a service acceptable to all sections of the people. (This suggestion evoked loud applause.)

I pray you forgive me for making this last plea, but it is all I can do to save the profession from serfdom of a most degrading quality and the people from being dragged down in their company.—I am, etc.,

London, S.W.3. A. R. EATES.

## Strength of the Profession

SIR,—How refreshing it is to read the letter from Dr. Alfred Cox (May 15, p. 949). The two final paragraphs are particularly to the point. As Dr. Cox says, the time is short. Regulations are in the melting pot; some may be already cooling off and solidifying, and once having taken their new pattern will require much hard labour to reshape to a better design. Constructive suggestions are now urgently required to assist the Negotiating Committee, upon whom rests the responsibility of examining with a critical eye those Regulations now in process of formation and of placing our views thereon before the Ministry.

Experience of Army staff work leads one to the inevitable conclusion that, in framing an Order or a Regulation, which one hopes to have willingly carried out rather than be used as a basis of discussion only, the people most affected thereby must first be consulted. By this I mean one must get right down to the N.C.O. or private soldier whose co-operation will be required if the Regulation is not to become a farce. This parallel should be closely followed by the "back-room boys" of the Ministry who produce our Regulations. They must be made to realize that you cannot regulate human nature. They must produce something that measures up to the criteria of justice, reason, clarity, and lack of ambiguity either directly or by inference; if this be not so then it were better that it be still-born.

As a case in point I would call the attention of the Negotiating Committee to the following anomalies. Study the propaganda pamphlet issued to each of us by Whitehall, dated April, 1948, headed "General Medical Services," under the subheading "Fee Charging." By reasonable inference therefrom a patient who has negligently omitted to secure acceptance as a "risk" by a practitioner until she is actually sick and in need of immediate attention might be treated as a private patient until such time as she has recovered and can then be accepted as a normal risk—a very necessary safeguard for practitioners against dilatoriness on the part of patients. But on reference to Regs. N.H.S., 1948, No. 506, Part IV, para. 13, under subheading "Allocation Scheme" you will find that the Minister coolly suggests to each council that it should take away that implied right and lay upon the practitioner the onus of either accepting the risk free of charge or finding somebody else who will be fool enough to do so.

I submit that by these Regulations the Minister places the whole population immediately "at risk" on and after July 5, whether or not the individual members thereof have, before that time or indeed within several years thereafter, taken the trouble to secure the acceptance of their "risk."

But does he offer the practitioners a commensurate premium for their liabilities? A second propaganda pamphlet issued to us all from Whitehall, dated April, 1948, and headed "Remuneration of General Practitioners," supplies the answer in its third paragraph. In effect the Minister appropriates from the taxpayer 18s. per head for 95% of the population and forms a pool. He then proceeds to pull out the plug from the bottom of the pool and invites us to drink from the muddy water left behind. He offers to pay us for the few people who understand the necessity of early acceptance by us and in addition for *one-third only* of the dilatory ones, for all of whom we have been "at risk" from the commencement of the scheme. We can whistle for the rest.

A recent resolution by Doncaster, forwarded to the Negotiating Committee and the Representative Meeting, is based upon the conservative assumption that at least an equivalent number of the dependants of the present insured population will take full advantage of the benefits offered under the scheme and will sooner or later call upon our services. It requests that the allocation be based at first upon double the numbers of our present panels and be adjusted upwards or downwards at a later date in the light of experience. This resolution seeks only a fair and logical premium for the "risks" forced upon us by the Minister.

Edlington, near Doncaster, Yorks. R. S. GILCHRIST.

## Remuneration of General Practitioners

SIR,—In your issue of May 15 in a leading article (p. 936) you state that Mr. Bevan has accepted the Spens Committee's recommendations on remuneration for general practitioners: you do not state that he has implemented them. In a little booklet entitled *The Doctor's Case* it is stated that "the Government has treated the medical profession fairly enough in its arrangements for deciding what doctors should be paid." If you will refer to my letter in the *Lancet* of May 15 (p. 770) you will see how very wide of the truth these remarks are. I should like your readers to realize the true position.—I am, etc.,

Worthing, Sussex. HAROLD LEESON.

## A Specialists' Charter

SIR,—As a gynaecologist my ear is already attuned to the 50 guineas for the 3s. 10d. of the new Health Service. Many of my patients will have in advance prepared to vote into power the Father Xmases of the present Government for a further term on the strength of this prospect. And who am I to discourage them when I can also don my shorts and enter into the race for ducal honours after a hearty dose of Grimm's—self-synthetized if necessary.

The Government is promising complete specialist services under its new scheme. It is quite obvious if the patient is not paying specific fees to the consultants in the future—arising out of this arrangement—that the Government is aware that its action is definitely spoiling the expectation of earning from specialist practice. Custom has established the specialist's right to this method of earning. Legally if he is dispossessed of this right he is entitled to damages, unless the alternative arrangement leaves him no worse off financially. There can be no doubt whatever that if the new health scheme succeeds in depriving the specialist of his private practice much financial

loss will be sustained by him. The very inelasticity of the envisaged method of payment will alone ensure this.

I would suggest that compensation to the extent of £5,000 for every ten years of specialist service, with a maximum of £10,000, should be the agreed damages for this loss of expectation. Such a course would imply the Government's confidence that its new scheme will save the contributor from paying out fees to specialists, and would underline its honesty.

If a specialist's private practice is largely to be abolished the corollary is that he will have to support himself equally largely out of the salary he is paid for his duties at hospitals to which he is attached. My second suggestion is that £500 per year per appointment is the absolute minimum rate of payment. In addition sessional opportunities for work at a rate of £250 per session should be made available to cope with the pressure of the extra work that in theory should arise, and also to permit the practice-starved specialist to survive without existing on his capital, even if augmented by the aforementioned damages.

Thirdly, I would suggest that the offer of alternative appointment should only be considered if strictly *equivalent* facilities and opportunities are offered. A take-it-or-leave-it condescension can find no room in the contracts to be signed.

Here I would recommend that a committee of assessors should be appointed. It should be constituted principally of specialists, and if the equivalence of a proposed alternative appointment was in dispute the matter should be submitted to them for adjudication, and their ruling should be binding on both parties of the contract. A similar body should be set up to advise on any differences of opinion between employer and employed. Their services will surely be needed in the future to restrain the commissars on our door-step.

I should like to submit these four points for consideration and incorporation in a specialists' "charter." But above all is there not sufficient time to devise and arrange for signature a mutual form of guarantee among specialists whereby we declare our solidarity in the defence of these principles and our singleness of purpose to explore ways and means to enforce them? We are fortified morally. The change-over means the exchange of freedom for thraldom and the replacement of the principle of reward for striving by the use of the big stick for the lack of effort.

Well turbaned our Minister may traverse our Harley Streets in his quest to exchange his lamp for Aladdin's own. Let the specialists recognize this so that they may live happily ever after.—I am, etc.,

London, W.1. JOHN SOPHIAN.

## Activity of Liver Extracts

SIR,—In your issue of April 10 (p. 701) a report is given of a discussion on the megalocytic anaemias at the Royal Society of Medicine on March 23, 1948. I was surprised to read that Dr. J. F. Wilkinson stated that he had never been able to obtain an active liver extract from the liver of fishes after the oil had been removed. I would therefore like to draw attention to the fact that I produced a very potent oral liver extract from fish liver in Aberdeen in 1932, and that a full report of the haematological findings of patients treated with this extract was published in the *British Medical Journal*.[1] Two of the cases were treated with this extract by Dr. Wilkinson himself in Manchester. He reported to me that my extract of fish liver had resulted in the blood count being quadrupled in one case in three weeks and trebled in another case in thirteen days. Acknowledgment was made in this paper to the independent testimony of Dr. J. F. Wilkinson regarding the efficiency of fish-liver extract. It is to be noted that an aqueous extract of fish liver has also been used successfully by Connery[2] in America. The introduction of parenteral liver therapy shortly after we had successfully produced active oral liver extract from fishes was the reason why this method of production was discontinued, as it is generally agreed by the majority of leading haematologists all over the world that parenteral therapy has considerable advantages over oral therapy with liver or hog's stomach preparations.

Dr. Wilkinson, when discussing megaloblastic anaemias refractory to highly purified liver preparations, stated that it was essential that the individual batch of the liver preparation to which the patient was refractory should have been tested for potency on a classical case of pernicious anaemia. Without such knowledge the refractoriness might be due to an inactive batch of liver extract being used. I would entirely agree with this suggestion. During the 20 years which have elapsed since I first published a report on the testing of liver extract I have tested the activity of a large variety of liver preparations, both commercial and experimental, in many hundreds of cases of pernicious anaemia. I always have at my disposal batches of liver extract of proved potency, which are available for use in cases of megaloblastic anaemia which have failed to respond partially or totally to liver therapy.

Refractoriness to parenteral liver therapy occurs most frequently in nutritional megaloblastic anaemia, in megaloblastic anaemia associated with the sprue syndrome and pregnancy, and in a small number of cases of megaloblastic anaemia in which no cause for the refractoriness to parenteral liver therapy can be discovered. In all these groups free hydrochloric acid may or may not be present in the gastric juice. The degree of refractoriness depends partly on the type and potency of the liver preparation given and its route of administration, and partly on personal factors in the patient, some of which are known and others of which are unknown. It is therefore essential when defining refractoriness to liver therapy to state clearly the criteria used.

In a paper entitled "Refractory Megaloblastic Anaemia," which appeared recently in *Blood*,[3] I have defined the term "refractory megaloblastic anaemia" as used by myself, and submitted records of a variety of cases of megaloblastic anaemia which failed to respond to potent preparations of purified liver extract and thereafter responded to folic acid or proteolysed liver. Anyone interested in refractory megaloblastic anaemia can consult this paper for further details.—I am, etc.,

Edinburgh. L. S. P. DAVIDSON.

### REFERENCES

1 *British Medical Journal*, 1932, **2**, 347.
2 *Amer. J. med. Sci*, 1930, **180**, 603.
3 *Blood*, 1948, **3**, 107.

*** Dr. J. F. Wilkinson's paper, to which Prof. Davidson refers, was read at a meeting of the Royal Society of Medicine and only a shortened version was published in the *Journal*. To avoid misunderstanding we showed Prof. Davidson's letter to Dr. Wilkinson, who tells us that what he in fact said at the meeting was, "Extracts of fish livers (cod, halibut, salmon, etc.), and also whale liver, when prepared from fresh livers, are haemopoietically very active, both orally and parenterally, but commercial fish and whale liver discards (residues) after the extraction of their respective oils by superheated or live steam do not furnish active preparations at all . . . and I have yet to obtain an active liver extract from reptilian and amphibian livers."—ED., *B.M.J.*

## "Alkalosis" and the Effects of Alcohol

SIR,—I was interested to read the medico-legal case concerning alkalosis and the effects of alcohol (May 1, p. 861). It immediately called to mind a case under my care in 1936 when I was a house physician.

My patient, aged somewhere in the late forties, had a radiologically proven active duodenal ulcer. My Chief ordered his routine treatment at that time, which included 1–2 hourly feeds, with alkalis 2-hourly, but not belladonna or atropine. Within a day or so of the onset of this treatment the experienced sister-in-charge said to me that the behaviour of this patient was a bit odd at times. The following morning the night report showed that the patient was getting out of bed and had threatened to commit suicide. In the morning when I spoke to him he was most confused; his concentration was very poor, as was his memory, and it was not possible to hold his attention for any length of time. He would keep looking all around him, was restless and fidgety. Of course delirium tremens leapt to mind. However, the mental confusion and the very furred and dry tongue reminded me of a case of uraemia that I had seen, and a blood urea estimation was made. This showed a blood urea of 144 mg.%.

A tentative diagnosis of alkalosis was made. Alkali administration was stopped at once and the patient given frequent meals of well-cooked, easily digestible, and palatable food. By the next day he was much better. Blood urea estimations were carried out every 2 or 3 days; they eventually dropped to within normal limits. As there was no other cause for the uraemia it was now presumed that the cause of this as well as the patient's abnormal conduct was alkalosis. I must add that there never was hypertension, nor any abnormal findings on ophthalmoscopy, and that the urine never showed any albumin, red cells, or casts. At no time had there

been oedema, diarrhoea, or vomiting. No other drugs had been given and the patient's conduct prior to the commencement of treatment in hospital had been normal.

The patient was now a pleasant and co-operative individual who was rather vague about what had been happening to him during the days when his behaviour was abnormal. He scarcely ever touched alcohol because of his disability and had no previous history of mental aberration.

It is not too difficult to imagine what might have happened had this patient over-indulged in alkalis as an out-patient and had one whisky in milk, as some individuals I know are apt to do, followed by a car accident. The examining doctor would have observed a smell of alcohol and abnormal conduct, especially with the excitement of a car accident and a medical examination in such circumstances. Might not a doctor be excused for insisting on a diagnosis of alcoholism when the abnormal mental conduct would be predominantly the result of alkalosis ?

A colleague of mine informs me of a case of urinary infection who died from alkalosis in the pre-sulphonamide days, when massive alkaline therapy was the order of the day. A blood urea estimation was suggested by an astute and enthusiastic nurse who had been swotting Price. It would appear to me that alkalosis should be kept in mind in all cases where alkalis are administered, especially when massive alkaline therapy is adopted. I have never forgotten the case that I have just described, and it has served me well.—I am, etc.,

JOHN MACKAY-DICK,
Lt.-Col. R.A.M.C.

B.A.O.R.

## The Mystery of the Eosinophil

SIR,—Some years ago I took considerable interest in the eosinophil, and it left me with the impression that it is part of a defence mechanism, and that the occurrence of eosinophilia not otherwise explicable suggests the presence of a known, unknown, or facultative allergen.

Morphologically, the polynuclear leucocyte and the eosinophil are practically identical. They differ only in their staining reaction and granularity. The production of eosinophils can be provoked experimentally by infestation with intestinal or blood helminths, and it appears that the resulting eosinophilia is a response to a specific stimulus, in effect a foreign protein—a modified polymorph, in fact. In true allergic bronchospasm the exudate from the upper air passages is crowded with eosinophils, and in sensitive persons the spasm may be induced by various air-borne allergens—which appears to be not without significance.

There is not space in a brief letter such as the present to discuss all the conditions in which eosinophilia is a marked feature, but a line worth following is based on the theory that the granules in eosinophils are possible precursors of lysins the object of which is to effect lysis of the responsible allergen. My work convinced me that eosinophilia is a *result* and not a cause, and when it is present the cause has still to be sought. I certainly cannot agree with the "overflow" theory of eosinophilia in lymphadenoma, the cause of which is still unknown. In "eosinophilic granuloma" of skin the name suggests that eosinophilia is the cause of the granuloma rather than the result, as also in "tropical eosinophilia" and eosinophilic disease of the lungs. I have seen individuals who give an abnormal eosinophilic response to trivial or comparatively trivial causes; for example, a 60% count in a case of sunburn with a so-called "herpetiform" eruption of the lip and cheek.

I am certain that further work on the subject is long overdue and would be amply repaid, just as I am convinced that eosinophilia is protective in intention and never causative, however high the count.—I am, etc.,

Brookwood, Surrey. H. M. STANLEY TURNER.

## Treatment of Phlebothrombosis

SIR,—Mr. Hamilton Bailey's article (March 27, p. 594) emphasizes the need of active treatment for patients with post-operative thrombosis and pulmonary embolism. There is certainly great need for this emphasis, since complete immobilization of the leg for several weeks is still a common practice. Nor is this surprising, since the majority of textbooks published during the last two years still advise this conservative treatment for femoral thrombosis. The diagnosis of incipient deep calf thrombosis is rarely even mentioned.

Nevertheless I do not believe that ligature of the femoral vein is the solution to the problem for the following reasons. First, in certain cases of pulmonary embolism, especially following gynaecological operations, the site of origin of the embolus cannot be detected in spite of careful examination of the legs. Would Mr. Bailey here advocate the ligation of the inferior vena cava, a serious operation in an ill patient, however expertly it may be performed ?

In the second place, the end-results of thrombosis of the deep leg veins must be considered. Bauer has shown that nearly four out of five of such patients eventually develop a leg ulcer. It is difficult to believe that the ligation of the saphenous and common femoral veins in a patient who already has obstruction to some of the deep venous channels will not increase venous stagnation and consequently the risk of developing an ulcer. As the sequelae of chronic venous stagnation may take ten years to develop, the end-results of venous interruption may be more severe than is at first supposed.

On the other hand the anticoagulant drugs have been shown to be at least as effective as femoral ligation in the immediate treatment of venous thrombosis and pulmonary embolism, as was demonstrated by Mr. Gavin J. Cleland (April 17, p. 755). They have the added advantages of controlling venous thrombosis wherever it is situated, and of preventing the spread of thrombosis to the opposite leg, which occurs in 30% of cases treated conservatively. Moreover, as Zilliacus has shown, anticoagulant treatment prevents the spread of thrombosis from the calf to the thigh and thereby the chronic swelling and ulceration which otherwise frequently occurs. From the practical standpoint heparin is usually not difficult to administer. I have found that patients prefer a continuous drip transfusion to intermittent injections, provided that the needle is inserted at the wrist and not at the elbow. The production of a suitable delayed-acting heparin, such as heparin (Pitkin), which is now being used in the United States, would make heparin treatment much easier still. The cost of treating a patient with heparin is often no more than that of keeping him for one week in hospital. As the use of anticoagulants reduces the stay of the patient in hospital by four to six weeks it is indeed economical.

Where facilities for the estimation of the prothrombin concentration of the plasma are available, a combination of heparin and dicoumarol is probably the best treatment available. I agree with Mr. W. M. Capper (April 24, p. 807) that vein interruption may be necessary for cases in which anticoagulants are contraindicated, but I believe they form only a small minority. For most cases the anticoagulants are completely effective and should, in my opinion, be considered as essential to the treatment of venous thrombosis as insulin is to that of diabetes.—I am, etc.,

London, N.W.10. KEITH BALL.

## Origin of Depression

SIR,—The publication of Dr. W. Clifford M. Scott's paper on "A Psycho-analytic Concept of the Origin of Depression" (March 20, p. 538), which he delivered to the Section of Psychiatry at the International Congress of Physicians last September, has provided an opportunity for more careful consideration of his views. In opening the discussion at the meeting I felt bound, though with some diffidence as laying no claim to be abreast of recent developments in psycho-analytic theory, to raise anew that often repeated doubt about the reliability of "memories" referred back to infancy, to which Dr. Scott and others of the Freudian persuasion attach a fundamental importance. Especially in such emotional states as depressions which are profound enough to call for intensive treatment, how can we ever really recall what went on in our minds at the tender and largely unmyelinated age of 2 or 3, unless indeed, as must often happen, we have been told by our parents at some later date what happened to us then and how we reacted ?

Even when true memories are recalled under psychological investigation, the mood of the present, if sufficiently intense, influences the selection of what is recalled from the past and the significance attached to past experiences. Are we to assume that all depressions are determined by past experiences, rather than they determine what is recalled about the past ? As no report of the discussion which followed Dr. Scott's paper is being published, I take leave, Sir, to make these observations.—I am, etc.,

Sydney. W. S. DAWSON.

### Histamine and Heat Stroke

SIR,—In the annotation (May 8, p. 887) and in Prof. J. H. Gaddum's paper (p. 867) reference is made to the work of J. Dekanski on the increase of histamine in the whole mouse after hyperthermia.

Histamine shock is very like the condition found in experimental animals (*British Encyclopaedia of Medical Practice*, Cum. Suppl., 1948, p. 172) and the definition of shock given by Moon, "Shock is a circulatory deficiency neither cardiac nor vasomotor in origin, characterized by decreased blood volume, decreased cardiac output (reduced volume flow) and by increased concentration of the blood." The deciding factor in this type of shock—and in histamine shock—appears to be uncontrollable dilatation of the intramural pores of the capillaries. Much clear fluid may be found in the abdominal, pleural, and pericardial cavities. Shock of this type was also visualized by Dale and Richards, to whose work reference is made in Prof. Gaddum's paper. In his words, "There are many kinds of shock," but the shock that is such an obstinate complication of heat stroke or hyperthermia in man presents many of the features of—and may well be—this histamine shock.

If it indeed proves to be the case that heat-stroke shock and histamine shock are the same, a really potent antihistamine drug may find a valued place in the immediate treatment of this medical emergency which, under modern conditions, ends only too often in disaster.—I am, etc.,

Epping, Essex. FRANK MARSH.

### Transfusion Reactions

SIR,—I have read with great interest the article by Dr. John Wallace and Mr. R. D. Richards (April 3, p. 640). I am having printed a statistic about the courses of 795 transfusions made in the hospitals of Milan, which show in the 25.4% of cases reactions of various nature and seriousness that can be classified as follows :

| Nature of Reaction | No. of Cases Observed | Percentage |
|---|---|---|
| Fever | 111 | 13·9 |
| Shivering without fever | 40 | 5·2 |
| Headache | 9 | 1·1 |
| Vomiting | 7 | 0·9 |
| Shock | 7 | 0·9 |
| Nettle rash | 6 | 0·7 |
| Cramps and convulsions | 5 | 0·6 |
| Feeling cold and tinglings | 4 | 0·5 |
| Retrosternal pains | 3 | 0·3 |
| Deaths | 3 | 0·3 |
| Articulation pains | 2 | 0·2 |
| Dyspnoea | 2 | 0·2 |
| Petechiae | 1 | 0·1 |
| Venous spasm | 1 | 1·1 |

I perfectly agree with the authors of the work above mentioned about the pathogenesis of these reactions, and from my point of view I insist upon the educational control of those who carry out the transfusions in order to avoid anaphylactic transfusional reactions, and chiefly upon the most careful cleanness and sterilization of the technical apparatus.—I am, etc.,

The University, Milan. RINALDO BEVACQUA.

### Pain in Phantom Limbs

SIR,—A large number of doctors realize that pain in phantom limbs is of central origin, due to faulty registration of afferent impulses. Heroic surgical procedures—I will not recount them—invariably fail. They betoken complete lack of insight into aetiology on the part of the surgeon.

Dr. J. Donaldson Craig finishes his letter (May 8, p. 904) with the words, "Simple methods of proven efficacy are available." May I draw attention to a simple method of proven efficacy, and one which is, I think, based on a proper conception of the distressing condition ?

My experience of treatment goes back to the aftermath of the first World War. There was no lack of amputation stumps on which to put the method into practice. During the 25 years which followed cases belonged mostly to the groups of industrial accidents and road smashes. The underlying conception of the condition is that following amputations there is a frequent tendency for the sufferer to block afferent impulses at the level of the thalamus—the thalamus being the central relay station for pain. If this block can be overcome, the peculiarly distressing thalamic over-reaction is replaced by normal discriminative cortical sensation. The patient at once becomes comfortable.

Now as to procedure—the important thing is to persuade the patient to put up with a brief period of over-stimulation. Explain things first, then start manipulation of the painful stump. This manipulation should be firm from the start and should become increasingly heavier and heavier. After the first few minutes the patient ceases to flinch. Normally within, say, twenty minutes he will put up with the heaviest manipulation, squeezing, hitting, banging. In half an hour the thalamic over-reaction, with all its affective qualities, has ceased to operate.

The patient should then be able to bear all normal pressure and contacts—e.g., the wearing of an artificial limb. One point is of real importance—from the time of treatment the patient must cease to nurse the offending stump. The same principles apply to painful abdominal scars. Do not nurse and protect them, hit them!

I have little belief in neuromata as the cause of distressing pain with the marked affective reaction seen in these cases. When any nerve is cut a neuroma forms, but to attribute the pain of phantom limbs to this condition is wrong. The error would be of less importance if it did not lead sometimes to atrocious treatment.—I am, etc.,

Bristol. HUGH H. CARLETON.

## POINTS FROM LETTERS

### Neurosis and Religious Denomination

Dr. J. COWEN (Radcliffe-on-Trent, Notts) writes: Dr. Slater's article on "Neurosis and Religious Denomination" (*J. ment. Sci.*, 1947, **93**, 392), and your annotation (May 8, p. 889) upon it, remind me of a remark attributed (I think) to Ferenczi, to the effect that a religion is a public psychoneurosis; a psychoneurosis is a private religion. I heard this late in 1942, when I was a trainee psychiatrist at a military psychiatric hospital, and it occurred to me then that there might be an inverse relationship between incidence of neurosis and orthodoxy in religious adherence. . . . Dr. Slater suggests that the progressive rise in incidence of neurosis among Jews during the course of the war may have been due to their greater susceptibility to home-separation anxiety. I would add to this other possibilities. Thus, the demands of Service life enforced a departure from the orthodox ritual practices of the Jewish home—the resulting weakening in religious faith may have increased a predisposition to neurosis. Also, at the beginning of the war, the morale of the Jewish Servicemen was high, because they believed that the defeat of Nazism would mean the end of anti-semitism; whereas it later became apparent that anti-semitic feeling was not vanishing automatically with the disappearance of the Hitler régime. The consequent drop in morale, and the resurgence of feelings of insecurity *vis-à-vis* this new world they were helping to fight for, took the heart out of their effort, and an escape into psychopathy was almost inevitable.

### Advantages of Service

Dr. H. S. GRIFFITH (Wolverhampton) writes: . . . If we must have a service why not concentrate on obtaining the advantages of one, for advantages there undoubtedly can be, not so much perhaps for the big business men of the profession but certainly for the single-handed ones—and their wives.

### Credé's Method

Dr. J. F. DEVLIN (Leeds) writes: I was rather interested in the discussion on Credé's method reported in the *Journal* of April 17 (p. 748). Credé's method, or better known to me as the Dublin method of expression of the placenta, as taught in the Dublin School was the expression of the placenta after it had separated from the uterus and had descended into the vagina; as a method to try to induce separation of the placenta it was liable to produce either an adherent placenta or post-partum haemorrhage. . . .

### Hyperidrosis

Dr. EVA MCCALL (Sunninghill, Berks) writes: As Mr. H. A. Haxton (April 3, p. 636) states that the aetiology of hyperidrosis is often obscure, it may be worth while recalling that this condition was a marked feature among the victims of the serious epidemic of arsenical poisoning in beer drinkers which occurred in the Manchester district in 1901. Many of the cases came under my care in the Salford Union Infirmary, and in fact supplied me with material for my M.D. thesis, and I even now recall that hyperidrosis, especially of the palms and soles, was often present.

# Obituary

## SIR GEORGE BLACKER, C.B.E., M.D., F.R.C.P., F.R.C.S.

*Consulting Obstetric Physician, University College Hospital*

Sir George Blacker, who died on May 21 at Frensham, Surrey, where he had been living in retirement for some years, was a leading figure in obstetrics in London for three decades. His work at University College Hospital Medical School and as an examiner helped to raise the level of teaching in midwifery thirty years ago. He took an active part in the discussions on this subject which were started by the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, and continued in the medical press, immediately after the first world war. Blacker urged the provision in different parts of London of four or more large lying-in institutions where the student could receive his practical teaching in midwifery, gynaecology, and maternity and child welfare all under the one roof. The institutions which he proposed were to be large enough to provide for all medical students in London and to be officered by whole-time properly paid senior teachers. In some respects he was in advance of his time on educational as well as on other problems.

George Francis Blacker was born in Dublin in 1865, the third son of Commissary-General Latham Blacker, member of a well-known military family in County Tyrone. He received his education in England, at Cheltenham College, a school for which he always retained affection. Forty years after leaving it he became president of the Old Cheltonian Society. From there he passed to University College, London, and thus began a connexion with the Gower Street hospital which lasted for the rest of his life. Blacker's career as a student was brilliant. In 1888 he was exhibitioner and gold medallist in anatomy and materia medica and pharmaceutical chemistry in the University of London; in 1891 Atkinson-Morley surgical scholar, and in the same year he took the M.B., B.S.Lond. with the gold medal in surgery and obstetric medicine, and became a Fellow of the Royal College of Surgeons of England. Two years later he took his London M.D., qualifying for the gold medal. In 1902 he was elected a Fellow of the Royal College of Physicians.

University College Hospital Medical School has had many able teachers in obstetrics, and Blacker's name stands high amongst them, alike for the soundness of his teaching and the strength of his personality. For many years he was lecturer in midwifery in the School, and for a long period he was dean. During his deanship the Rockefeller gifts were made to the college and the medical school—namely, the income from the sum of nearly half a million pounds to be used in the furtherance of medical education and research, and a further annual sum for the upkeep of 120 beds in the medical and surgical units. On his retirement in the early 'thirties he was made consulting obstetric physician to the hospital; he held a similar position at the Royal Northern Hospital. He was also a Fellow of University College. At various times Blacker had acted as examiner in midwifery to the Conjoint Board and to the Universities of London, Liverpool, and New Zealand. His busy practice and teaching duties left him little time for writing, but he was an occasional contributor to the medical journals, and he edited the seventh edition of Galabin's well-known *Practice of Midwifery*. He was interested in the application of radium in medicine, and in 1929 became president of the Radium Institute in succession to Sir Anthony Bowlby; he was, too, vice-president of Mount Vernon Hospital. He was also at one time president of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine. Another of his interests was the Red Cross movement, and he was honorary life member and for a time chairman of the Farnham Branch of the Red Cross. Blacker served in the 1914–18 war with the rank of captain, R.A.M.C., and was twice mentioned in dispatches.

In 1920 he was appointed Commander of the Order of the British Empire and received his knighthood three years later. He married in 1904 Miss Shirley Bowen, daughter of Canon T. J. Bowen, of Bristol, and had one son. On his retirement he sought a quiet retreat in Hampshire and later in Surrey. He was a man without ostentation, of simple tastes and quiet mind, and it was in keeping with the spirit of his life that he should have desired at his death no mourning and no memorial service.

## ROBERT OLLERENSHAW, M.D., F.R.C.S.

The sudden death of Mr. Robert Ollerenshaw, although not unexpected even by himself, came as a great shock to his many friends, acquaintances, and colleagues, for he seemed to be in comparatively good health. He had been forced to restrict his activities following a severe attack of angina in December, 1946, yet despite not infrequent attacks of pain he remained his usual cheerful and genial self in the intervening period. In the morning of May 19 he performed an operation and then had lunch with the director of the Hallé Orchestra, discussing plans for the forthcoming trip to Austria, on which he intended to accompany the Orchestra in his capacity as a member of the committee of many years' standing and as the honorary medical officer. After lunch at the Clarendon Club he was indulging in his usual cup of coffee when he collapsed and died.

Robert Ollerenshaw, the son of George Ollerenshaw, J.P., of Glossop, was born at Blackburn in 1882. He was educated at Manchester Grammar School and at Owens College. He graduated M.B., Ch.B. in 1905 and proceeded M.D. three years later. He took the F.R.C.S. in 1909. As a student, Ollerenshaw was outstanding at soccer and an excellent tennis player. His postgraduate training continued at London and Berlin and he held resident posts at the Manchester Royal Infirmary and the Liverpool Children's Hospital. His early surgical career was that of a general surgeon, and in the 1914–18 war he acted as a surgical specialist with the rank of major in the R.A.M.C. He served with the Second Western General Hospital, as did the late Prof. A. H. Burgess and so many other Manchester surgeons, and subsequently with the 57th General Hospital in France.

Soon after his return Ollerenshaw restricted his interests to orthopaedic surgery and was appointed honorary orthopaedic surgeon to the Royal Manchester Children's Hospital and to Salford Royal Hospital, and visiting consultant orthopaedic surgeon to Booth Hall Hospital. He relinquished the latter appointment in 1940 and retired from the active honorary staff at Salford Royal Hospital on reaching the age of 65 in 1947. His services to this hospital were recognized, to his delight, by his appointment to the board of management. The Orthopaedic Department which Ollerenshaw established at Salford Royal Hospital was one of the first in the country, and those of us who worked with him found him a genial tyrant who could not devote too much attention to details. His professed motto was "Nothing but the best," and he had a tremendous capacity for inspiring all those who were associated with him. He could be as sympathetic and tender as a mother in dealing with his small patients and those who were ill, but he had no use for those whose complaints were imaginary.

Robert Ollerenshaw was a member of many professional societies and had been president of the Manchester Surgical Society and of the Orthopaedic Section of the Royal Society of Medicine. He was a vice-president of the British Orthopaedic Association and of the Section of Orthopaedics at the 1929 annual meeting of the British Medical Association. He was a Fellow of the International Society of Orthopaedic Surgery and an honorary Fellow of the French Orthopaedic Association. His publications covered many subjects; that on the development of cysts of the semi-lunar cartilage is probably the best known. He was also responsible for sections of several textbooks and for a number of papers on orthopaedic problems.

As a teacher he was superb, and at least two decades of students have benefited from his lectures and demonstrations as clinical lecturer in orthopaedic surgery at the University of Manchester. He was appointed lecturer in 1926 and was one of the pioneers in the use of films for recording and teaching. With the assistance of his sons he made the first coloured ciné film of an operation—his treatment of pes cavus.

To omit mention of his non-professional life would present a very one-sided picture of "Bob"—as he was to his friends. He was a *bon viveur* and he delighted in the company of his fellows, particularly if musically inclined. He belonged to clubs and societies, but was happiest when entertaining in his

home at Didsbury, where for many years until her tragic death in 1933 his wife, Florence, daughter of Senator Robert Watson of Portage-la-Prarie, Manitoba, was a charming hostess. Not only were friends, colleagues, and house-surgeons welcome guests, but many famous personalities of the theatrical and musical world, notably Sir Henry Lytton and Nicoli Malko, often stayed there. His abiding interest and passion was the Hallé Orchestra, and he rarely missed a concert. He was not content only to listen but gathered around him a small group of friends and relatives and delighted to take part in small orchestral concerts in his own home. His two sons, both of them members of the medical profession, joined their father in this relaxation.—W. S.-C.

## PROF. A. H. BURGESS, M.Sc., F.R.C.S., LL.D.

Prof. Geoffrey Jefferson writes: An old house-surgeon of the late Arthur Burgess must pay his tribute to his old master. It was apparent to one like myself who worked for a senior (G. A. Wright) as well as for an assistant surgeon (as Arthur Burgess then was) that the latter represented the change from the old to the new in surgery. Wright was the perfect example of the traditional British school with Sir James Paget and Lord Lister as models: men of great character, great probity, great intelligence, and with all that a certain air of aristocracy and wide cultural background. There was an air of scholarship about their work which seems somewhat unnecessarily to have been lost. Burgess brought a more clearly defined air of professional precision into surgery. There was to be a new care now about technical detail, a new insistence on asepsis, on preparation, on instrumentation, on tactics rather than strategy. It was by Burgess as much as anybody else that the safety and ease of all kinds of abdominal operations were brought to so high a pitch, certainly one greatly superior to, and more successful and more adventurous than, anything that his seniors had achieved. When anyone writes, thinks, or speaks on such matters the names of Mayo Robson and Moynihan must perforce come up, protestingly perhaps against the claims of others. It was valuable historically that Burgess was younger, for it made it possible for him to support at the time and later to continue the work so well begun. Moreover (a favourite word of Burgess's), abdominal surgery was brought to its high summer not by Moynihan alone but by a group, each of whom added something personal. Burgess's work was completely sincere; there never was a less evasive man in his work or anything else. Industry, sobriety, thoroughness, honesty, are the words that best express him—indeed he could not always restrain his irritation over the claims made by those whose sense of artistry caused them to advance statements that were more "required" than exact, who indulged thus in scientific romanticism. Burgess had no sympathy for impressionism in surgery. Burgess was a true technical artist himself, but that everybody knows or, alas, knew. Burgess excelled in another important way—namely, his encouragement of the younger surgeons, not of one pupil alone but of several. Considering what a busy man he was, what a hurry the tall figure was always in, walking with brisk steps and straight back, one asks how he could have had time for anyone. Perhaps he hadn't much, for no one has in his busiest and most creative years, but one could rely on a smile, a pat on the back, and a word of encouragement. Certainly "young Jefferson," as Arthur Burgess always called the writer, will ever be grateful to that upright gentleman and great surgeon, pioneer and perfecter in the surgery of the abdominal organs.

## PROF. JOSEPH SEBRECHTS

Surgeons in this country will learn with great regret of the death of Prof. Joseph Sebrechts at the comparatively early age of 63. The funeral took place on April 2 and a service was held at the St. Sauveur Cathedral.

Mr. H. W. S. Wright writes: A visit to Bruges is always long to be remembered, and most of us at some time or other have visited his clinics. When one thinks of Joseph Sebrechts, recollections of the mass of clinical material at his disposal, his operative skill, his pioneer work on spinal anaesthesia, and his unbounded hospitality crowd into one's mind and are inseparable from those of the beautiful town in which he worked and lived. A private visit with him to see the Memlings is still a fresh and unforgettable experience. When Prof. Sebrechts went to Bruges in 1910 it was an unimportant provincial hospital; when he died at the end of March this year he had built it up into the most important centre of postgraduate teaching in that part of Belgium. Bruges is not a university town, but Sebrechts was an honorary professor of the University of Louvain.

A general surgeon in the widest sense, he was best known in this country for his abdominal surgery and his work on spinal anaesthesia. His views on the fractional dosage of hypobaric solutions were developed as the result of 25,000 cases, and were embodied in several papers published in this country. Altogether he had operated on more than 100,000 cases under anaesthesia produced in this way. In the long run he will be best remembered neither for his skill nor for his experience but for his humour, his friendliness, and his hospitality. In his own part of Belgium he was beloved by rich and poor, by doctors and assistants, for the way his time and energy were at the disposal of anyone who needed his help, his advice, or his skill. He thought little of the honours he obtained. He wanted most to be a good doctor and a good citizen. Those who lived alongside him will agree that he succeeded in both these objects.

He was an honorary Fellow of the Association of Surgeons of Great Britain and Ireland, and a Fellow of the Royal Society of Medicine and of a great many Continental and Belgian professional societies. His wife and family are assured of the deep sympathy of his British colleagues.

## CAPTAIN E. C. WATSON, D.S.O., R.N.

The late Captain E. C. Watson, who died in August last, was a distinguished naval officer before he took up medicine. Edward Clifford Watson became a medical student after twenty years' service in the Royal Navy, retiring with the rank of commander. He qualified in 1930 as a student of St. Mary's Hospital and was resident obstetrical officer there. He was promoted captain on the retired list in 1932, by which time he was in active practice with a partner in Twickenham.

Dr. J. B. Gurney Smith writes: May I be allowed to pay my tribute to a very versatile member of our profession. Captain Watson resumed his naval career in 1939. He served continuously afloat throughout the war, mostly in command of H.M. minelayers. He commanded H.M.S. *Port Quebec* and H.M.S. *Teviotbank*, in which latter ship I served under him as his medical officer for close on two years. He had a deep love for the sea and was an accomplished sailsman. During his command of the *Teviotbank* he was awarded the D.S.O. for his services in minelaying operations, a decoration which gave his officers considerable pleasure.

He had a profound knowledge of electrical engineering, having taken the M.I.E.E. before he entered the medical profession. He was an Admiralty consultant on radio problems during the first world war.

Captain Watson was a man of considerable charm and had a powerful personality. He was always most helpful to me as his medical officer, and I had the utmost confidence in his judgment on matters of importance. He had a wide knowledge of general affairs and read deeply. He taught himself foreign languages when we were in harbour. Although he had been out of touch with naval affairs for the period between the wars, yet he remembered all his seamanship and navigation. At the close of the war he would often invite me into his cabin to discuss medical matters. He was a most avid reader of the *B.M.J.*, which he received regularly at sea.

Our profession has lost a remarkable character and I feel sure that a host of one-time naval and medical colleagues will be the poorer for his passing. He spent his last days as health adviser to the Government of Trinidad, where he succumbed to a coronary thrombosis. A fine sailor and a very successful doctor has gone to his reward.

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Dr. ERNEST GRAHAM YOUNG THOM died at his home in Lanark, on May 8, after a short illness. Graduating M.A. in Glasgow University in 1907, Dr. Thom took his M.B., Ch.B. in 1913 and, following the first world war, began practice in Lanark. He retired in 1937, and in the same year was elected to the Lanark Town Council, becoming a bailie in 1946. He was secretary of the Lanarkshire Division of the British Medical Association from September, 1939, until May, 1947.

# Medico-Legal

## STILBOESTROL AS A CAUSE OF CANCER

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

A new form of medical malpractice is alleged in a report from California[1] of a suit brought by an ex-patient. The doctor pleaded that the action was barred by lapse of time. The trial court dismissed the complaint, but the district court of appeal held that the State's statute of limitations does not begin to run until the patient knows, or with ordinary care should know, the cause of his injury, and therefore allowed the action to proceed. This is as far as the report goes, but the allegations are interesting.

The patient says that from January, 1942, until June, 1943, the physician prescribed a substantial quantity of medicine containing stilboestrol in tablet form, and on June 1 ordered a hundred more tablets to be taken at the rate of one a day. After she had taken these tablets she took twenty-six more on the advice of another physician, whom she is also suing. She further alleged that stilboestrol is a synthetic oestrogen containing cancerous properties which may produce or cause cancer of the breast, especially in a woman with a family history of cancer of the breast, and that it should not be administered for prolonged periods, and only after a physical examination. She says that the physician knew that she had such a family history, for her mother had died from cancer of the breast. About Jan. 15, 1945, she says, while she was under the care and treatment of this physician and another, a lump developed in her right breast which laboratory tests disclosed to be cancer. On Feb. 10, 1945, she had an operation for removal of the breast.

The result of the action will be awaited with interest. The patient's obvious difficulty is to establish, in the present state of knowledge of the carcinogenic properties of oestrogen (if any), the required link of causation between the substance and the disease, and also that the treatment prescribed showed want of due skill and care.

[1] *J. Amer. med. Ass.*, 1948, **138**, 712.

# Medical Notes in Parliament

### Biopsy on Mutton

Answering Captain CROWDER on May 12, Dr. SUMMERSKILL said the Regulation in Statutory Instrument No. 886 of 1948 had been made to permit the importation of carcasses of mutton and lamb from which a lymphatic gland had been removed. British Regulations were now in line with those of the Southern Dominions, where such meat was ordinarily used for human consumption. A very careful examination was made. The prescapular, superficial-inguinal, supra-mammary, and precrural lymphatic glands were all removed. If a state of emaciation was found and the glands were affected, as happened much more often with mutton than with beef, the carcass was destroyed. She had examined some of these carcasses in Australia in 1945 but the Ministry wished to make quite sure that the complaint was not communicable to human beings. For that reason the amended Regulation had been delayed. The meat used would be the same as any other meat which had not had the lymphatic glands removed from it.

### Paying Patients

Mr. MITCHISON on May 14 asked whether anyone who was the paying patient of a general practitioner not undertaking to provide medical services under the National Health Service Act would be entitled to use the hospital and specialist services available under Part II of the Act; what steps should be taken by or on behalf of such a patient if it was found that he required those services; and in what respect his use of them would differ from their use by a patient who had been accepted by a doctor for general medical services under the Act.

Mr. BEVAN'S answer was that the same hospital and specialist services under the new Act would be available to any patient who required them, whether he availed himself of general medical services under Part IV of the Act or not. Normally he would be referred to these services by his doctor, but he was not debarred from getting them otherwise.

# The Services

Air Vice-Marshal P. C. Livingston, C.B., C.B.E., A.F.C., has been appointed Honorary Surgeon to the King in succession to Air Marshal Sir Andrew Grant, K.B.E., C.B., K.H.S., who has relinquished the appointment on retirement.

Surgeon Lieutenant-Commander J. L. Holgate, R.N.V.R., has been awarded the R.N.V.R. Decoration.

Colonel C. H. Budd, M.C., T.D., D.L., has been appointed Honorary Colonel, No. 6 (E) General Hospital.

Colonel A. H. Whyte, D.S.O., T.D., has been appointed Honorary Colonel, 50th (N) Infantry Division, R.A.M.C., in succession to Colonel W. E. Hume, C.M.G.

The following decorations have been conferred by the President of the U.S.A. in recognition of distinguished services in the cause of the Allies:

*Legion of Merit, Degree of Officer.*—Brigadiers (Temporary) H. L. Garson, O.B.E., M.C., T.D., and Sir Lionel E. H. Whitby, K.C.V.O., M.C., R.A.M.C.

*Bronze Star.*—Major R. Pollock and Major (Temporary) W. R. Henderson, O.B.E., R.A.M.C.

The following decorations have been conferred by the Prince Regent of Belgium in recognition of distinguished services in the cause of the Allies:

*Officer of the Order of the Crown.*—Lieutenant-Colonel A. Harrison-Hall and Lieutenant-Colonel (acting) H. V. Brennan, O.B.E., R.A.M.C.

*Officer of the Order of Leopold.*—Colonel C. D. M. Buckley, M.C., late R.A.M.C.

*Officer of the Order of Leopold II.*—Major (Temporary) C. E. Gallagher, O.B.E., R.A.M.C.

*Croix Militaire 2nd Class.*—Captain (Temporary) E. A. Harris, R.A.M.C.

The King of the Hellenes has conferred the decoration of Commander of the Royal Order of the Phoenix upon Colonel (Temporary) M. R. Burke, O.B.E., R.A.M.C., in recognition of distinguished services in the cause of the Allies.

The Queen of the Netherlands has conferred the decoration of Grand Officer of the Order of Orange Nassau with Swords upon Lieutenant-General Sir Alexander Hood, G.B.E., K.C.B., K.H.P., late R.A.M.C., in recognition of distinguished services in the cause of the Allies.

The King of the Hellenes has conferred the Distinguished Service Medal upon Colonel J. P. LaPlante, O.B.E., E.D., R.C.A.M.C., in recognition of distinguished services in the cause of the Allies.

In a *Supplement* to the *London Gazette* dated March 19, and in the *Journal* of April 10 (p. 712) an announcement appeared stating that the King of Norway had conferred the King Haakon VII Liberty Cross upon Major (Temporary) J. N. MacArtney, M.B.E., R.A.M.C., in recognition of distinguished services in the cause of the Allies. This name should have read Major J. E. McCartney, R.A.M.C.

### DEATHS IN THE SERVICES

Lieut.-Col. G. H. GODDARD, D.S.O., died on April 20 after a brief illness. Born in London in 1873, he was the son of Lieut.-Col. Thomas Goddard, of the Indian Army. He was educated at University College School and University College Hospital, and took the conjoint diploma in 1895. He spent two years as surgeon to the British India Steam Navigation Company, followed by two years in resident posts at the Sheffield Royal Infirmary. He joined the R.A.M.C. in 1899 and served through the Boer War, gaining the Queen's Medal with three clasps, and the King's Medal with two clasps. He also served in France with the rank of lieutenant-colonel during the first world war, was awarded the D.S.O. and was four times mentioned in dispatches; he was gassed in 1916. Goddard acted as D.D.M.S. at Gibraltar in 1919, being invalided on pension in 1923. He was then given command of the Military Hospital at Norton Barracks, Worcester, and finally retired in 1943, though he still remained active as chairman of the local pensions board. He became a member of the British Medical Association in 1901, was chairman of the Worcester and Bromsgrove Division in 1936–7, and a representative at the Annual Representative Meeting at Plymouth in 1938; and he was appointed Local Emergency Officer in the same year. During his twenty-five years in Worcester Goddard took part in many social and semi-public activities. He was made a Knight of Grace of the Venerable Order of St. John of Jerusalem in 1923, and for many years examined in first aid. He was also vice-chairman of the Worcestershire Joint Committee of the Red Cross and Order of St. John. He was a prominent Freemason, being a Past Grand Deacon of the United Grand Lodge of England, and Past Deputy District Grand Master of Gibraltar; he held high office in some of the higher degrees of Freemasonry. He was twice married, and leaves two sons by his first marriage, and a widow and one son of his second marriage. Colonel Goddard had a charming

and kindly personality and will be greatly missed in the City and County of Worcester, where many of his friends were accustomed to turn to him for sage counsel and advice, which was always readily given. A friend of his was heard to make a remark which sums up his character in a sentence: "I don't think he knew how to be unkind."

# Universities and Colleges

## UNIVERSITY OF OXFORD

In a Congregation held on April 29 the following degrees were conferred:

D.M.—D. L. Davies, *K. C. Royes.

*In absence.

## UNIVERSITY OF LONDON

The appointment of members of the Senate for 1948–52 has been made as follows: *Faculty of Medicine*, Prof. R. V. Christie, M.D., D.Sc., F.R.C.P. (in place of Sir Francis Fraser, M.D., F.R.C.P.); *General Medical Schools*, E. R. Boland, M.D., F.R.C.P. (in place of Dr. A. E. Clark-Kennedy). Sir Francis Fraser has been co-opted as a member of the Senate.

The following have been elected to the Fellowship of University College, London: Sir Stewart Duke-Elder, K.C.V.O., D.Sc., M.D., Ph.D., F.R.C.S., Surgery-Oculist to the King; Marion Grace Eggleton, D.Sc., M.R.C.S., L.R.C.P., Senior Lecturer in Physiology in the College; William Arthur Edward Karunaratne, M.D., Professor of Pathology and Dean of the Faculty, Ceylon Medical College; Philippa Parry Martin, M.S., F.R.C.S., formerly Hunterian Professor of the Royal College of Surgeons of England.

The following have been elected to the Honorary Fellowship of University College, London: Sir Henry Hallett Dale, O.M., G.B.E., M.D., F.R.C.P., F.R.S., Chairman of the Wellcome Trust and formerly President of the Royal Society; and Archibald Vivian Hill, C.H., LL.D., Sc.D., Hon. M.D., F.R.S., Foulerton Professor of Physiology (Biophysics Research Unit) in the college.

C. Price Thomas, F.R.C.S., has been appointed representative of the University at the twelfth session of Les Journées Medicales de Bruxelles, June 13–16.

Ivor Lewis, M.D., and A. Talbot Rogers, M.B., B.S., have been elected members of the Standing Committee of Convocation for the period 1948–51.

The following have been recognized as Teachers of the University in the subjects indicated in parentheses: *University College Hospital Medical School*, E. Gwynne Thomas, M.D., M.R.C.P. (Venereal Diseases). *Royal Dental Hospital School of Dental Surgery*, M. P. Graham, M.R.C.S., L.R.C.P., L.D.S., H. L. Hardwick, M.R.C.S., L.R.C.P., L.D.S., and A. B. MacGregor, M.D., L.D.S. (Dental Surgery).

The M.B., B.S. examinations in October will start on Tuesday, Oct. 19, instead of Monday, Oct. 11.

The following clarification of the exemption regulations in medicine and amendment of the regulations relating to exemption of advanced students (external) in the Faculty of Medicine were published in the *University of London Gazette* dated March 27:

"Where exemption is normally granted in respect of intermediate or final examinations in other Faculties, the words 'of this University' are included, but in the case of medicine this is not so, and students who have passed what they consider equivalent examinations of other universities have claimed exemption under these regulations. The section headed 'Exemptions' in the regulations in medicine for external students have therefore been amended to make it clear that exemption is granted only in respect of intermediate and final examinations of *this* University."

The regulations relating to exemption of advanced students (external) in the Faculty of Medicine have been amended and now read as follows: "In the Faculty of Medicine exemption from the first examination for medical degrees, in whole or in part, and from the course of study for the second examination for medical degrees, in whole or in part, may be granted to students who have passed all the examinations for an approved degree of another university. No exemption can be granted from the second examination for medical degrees or from any part of the clinical course."

Applications are invited for the William Julius Mickle Fellowship, which is of the value of approximately £250, and is awarded by the Senate to the man or woman who, being resident in London and a graduate of the University, has in the opinion of the Senate done most to advance medical art or science within the preceding five years. Applications must be received by Oct. 1. Further particulars should be obtained from the Academic Registrar, Senate House, London, W.C.1.

The following candidates have been approved at the examinations indicated:

POSTGRADUATE DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*With Mental Diseases (Psychiatry) in Part B*: G. M. Carstairs, I. L. W. Clancey, C. E. Lacey, R. T. C. Pratt. *Part A only*: W. W. Black, W. A. Ll. Bowen, J. P. Crawford, A. D. Forrest, S. V. S. Govinda Setty, E. J. Harrison, J. T. Hutchinson, P. M. Jeavons, J. H. McDougall, Betty E. A. Magill, A. J. P. Oldham, Ethel E. Robertson, H. H. Robinson, Lotte Rosenberg, D. Stafford-Clark, R. J. Stanley.

## UNIVERSITY OF ST. ANDREWS

Anthony Elliot Ritchie, M.D., has been appointed Chandos Professor of Physiology in the United College of the University.

## UNIVERSITY OF SHEFFIELD

At a meeting of the University Council, held on May 21, John Colquhoun, M.B., Ch.B., was appointed Honorary Lecturer in Bacteriology.

The Council received the resignations of Mr. Glyn A. Davies, F.R.C.S.Ed., and Dr. V. Blackman of the posts of lecturer in obstetrics and gynaecology and demonstrator in anatomy, respectively, and thanked them for their services to the University.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

An ordinary meeting of the Council of the College was held on May 13, with Sir Alfred Webb-Johnson, Bt., President, in the chair.

A resolution of condolence was passed on the death of Prof. A. H. Burgess, the senior member of the Council.

The following hospitals were recognized in connexion with the regulations for the Final Fellowship examination: Victoria Hospital, Accrington (senior house-surgeon, provided that an additional resident surgical post is created); County Hospital, Farnborough (first, second, and third house-surgeons); Royal Cancer Hospital, London (resident medical officer, first and second house-surgeons); Canadian Red Cross Memorial Hospital, Taplow (resident surgical officer and first house-surgeon); General Hospital, Newcastle-upon-Tyne (resident surgical officer and two surgical registrars); County Hospital, York (additional recognition of the second house-surgeon).

A Diploma of Fellowship was granted to David Ronald Urquhart.

Diplomas of Membership were granted to A. J. De Villiers, O. A. N. Husain, and Margaret N. A. Tew.

## ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on May 19, with Mr. Frank E. Jardine, President, in the chair, the following candidates, having passed the requisite examinations, were admitted Fellows: C. R. S. Davidson, E. O. Dawson, T. Dean, D. MacL. Douglas, A. K. Dutt, H. D. Fairman, J. Fine, L. B. Gottlieb, K. S. Grewal, E. G. Hardy, G. D. Jack, Z. A. Karim, S. Kavanagh, H. G. Khalsa, I. S. Kirkland, J. M. Large, A. J. Leonsins, D. G. Lloyd-Davies, E. J. Marais, J. McE. Megaw, N. V. Mody, O. D. Morris, R. A. McCluskie, A. B. MacLean, J. A. Orr, K. Paw, H. N. Perkins, W. R. Phillipps, M. C. Pinkerton, E. H. Rainer, P. M. Roemmele, A. K. Saha, A. I. Sahyoun, M. M. El Din Said, S. N. Sarma, O. J. Shah, W. D. Sharpe, B. J. Shaw, C. J. C. Smith, P. B. Sulakhe, R. Vaughan-Jones, O. Wahby, P. Wilson, L. E. Wood.

## ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

Prof. N. C. Louros, professor of obstetrics and gynaecology in the University of Athens, will deliver a lecture on "Accelerated Painless Labour" at the College House (58, Queen Anne Street, London, W.), on Friday, June 11, at 2.15 p.m. All members of the medical profession are invited to attend the lecture, admission to which is by ticket only, obtainable from the secretary, and allotted in order of application.

The following candidates have satisfied the examiners at the examination indicated:

DIPLOMA IN OBSTETRICS.—E. P. Abson, J. D. Andrew, Muriel S. Alexander, D. L. Arnold, P. B. Atkinson, P. Barron, J. P. Bennett, B. Bhattacharya, D. T. Binns, D. K. Black, D. H. Blakey, Winifrid M. Bond, S. C. Bose, G. Bridge, Jean M. Briscoe, Joyce E. Brooks, H. J. S. Brown, R. A. Bush, J. Campbell, J. P. Carlile, D. L. Carmichael, R. S. Casement, G. B. Chamberlain, J. E. Clay, Katharine M. D. Coltman, Janet S. Conn, Mary C. E. Constantine, R. W. Cowie, J. Crabb, Evelyn M. Crawford, D. H. Crook, J. Crossley, F. A. L. Da Cunha, M. H. Dale, J. M. B. Donaldson, J. Dougall, G. H. P. Drake, C. D. Drew, Elisabeth A. Ede, L. El-Badri, C. C. Evill, M. B. Fox, W. D. Frew, H. Friend, C. O. Fung-Kee-Fung, Elizabeth Gilbertson, D. W. H. Griffiths, Lilian M. Griffiths, P. Haden, Ruth A. Haes, C. Halamandres, L. Haldar, G. J. Hall, J. R. A. Hall, Constance I. Ham, D. M. Hare, S. H. Heard, J. Henderson, T. Hepburn, Nancy Heron, J. D. S. Hethcote, W. S. Hill, E. H. Hillyard, S. R. Hing, R. Hodkinson, Flora M. Hogg, H. J. Holloway, T. A. Hope, P. W. Hopper, H. Hutchison, E. W. Ilangantileke, R. A. Irani, P. F. C. Jackson, Ruby McL. Jackson, A. W. Kelly, G. L. Kennedy, H. H. Kirk, H. Korte, P. B. Lacy, R. Laverty, R. G. Law, Daisy J. Lee, R. E. Leighton, Jean B. Lindsay, R. H. Little, M. O. Luck, J. W. F. Lumsden, J. D. M. Lytle, Ishbel M. Macrae, Margaret D. R. McDougle, P. J. McEnroy, A. A. McKirdy, A. D. MacLean, J. H. MacLoughlin, I. F. MacMath, Florence H. Macmichael, T. McG. McNie, D. MacVicar, J. J. Marlow, Barbara D. S. Marshall, R. H. Martin, Queenie I. E. May, Eva G. Maughan, J. I. Miller, Norah C. Miller, C. M. Meyer, A. P. B. Mitchell, A. B. Mitra, G Morgan, N. Moss, Edith R. Munro, Alexina M. H. Myles, A. O. Nichols, W. P. O'Keeffe, Mary D. Owen, J. L. Park, R. B. Parker, Jean McM. Paterson, Noel J. Pease, J. H. Pendered, G. W. Pinder, J. H. McK. Pinkerton, H. P. Player, S. H. M. Price, J. Priceman, T. M. Pritchard, J. P. C. Purdon, Eleanor R. Raistrick, Angel M. Rendle-Short, J. C. A. Renshaw, P. Rhodes, Nancy M. E. Robertshaw, Ruth M. Rocke, T. M. Roulston, W. R. Russell, K. D. Salzmann, B. Sandler, H. I. Schmilg, J. W. F. Scrimgeour, T. O. Scudamore, E. H. Seward, Elsie M. Sibthorpe, S. A. Siddiki, A. Simons, E. M. Slattery A. L. H. Smith, Z. H. Y. Sobani, D. B. Spanton, Agnes M. Stark, Vera E. Stimpson, R. A. Thatcher, C. J. Thornberry, R. W. H. Tincker, S. Tomlinson, G. E. E. Usher-Somers, C. Venables, F. L. A. Vernon, F. G. H. Watson, Margaret S. White, G. F. J. Williams, J. A. Williams, Marion Williams, T. A. Yates, E. J. Young-Thompson, E. G. Zacks, O. Zammit.

No. 19

## INFECTIOUS DISEASES AND VITAL STATISTICS

**We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 8.**

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1948 (a) | (b) | (c) | (d) | (e) | 1947 (Corresponding Week) (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cerebrospinal fever | 46 | 4 | 13 | 3 | — | 74 | 3 | 19 | 1 | — |
| Deaths | | — | 1 | | | | 2 | — | | |
| Diphtheria | 143 | 15 | 44 | 6 | 8 | 194 | 24 | 55 | 18 | 7 |
| Deaths | 1 | 1 | — | — | — | 1 | 1 | 2 | — | — |
| Dysentery | 108 | 28 | 49 | 2 | — | 110 | 7 | 18 | — | — |
| Deaths | | | | — | — | | | | — | — |
| Encephalitis lethargica, acute | — | — | — | — | — | — | — | — | — | — |
| Deaths | | — | | | | | 1 | | | |
| Erysipelas | | | 15 | 8 | 2 | | | 36 | 6 | 1 |
| Deaths | | — | | | | | — | | | |
| Infective enteritis or diarrhoea under 2 years | | | | 23 | | | | | 29 | |
| Deaths | 30 | 1 | 3 | — | 1 | 95 | 14 | 16 | 7 | 3 |
| Measles* | 10,156 | 936 | 204 | 116 | 90 | 10,134 | 499 | 157 | 52 | 28 |
| Deaths† | | | 1 | — | — | 5 | — | 1 | — | — |
| Ophthalmia neonatorum | 59 | 5 | 12 | 1 | — | 73 | 4 | 12 | — | — |
| Deaths | | | | | | | | | | |
| Paratyphoid fever | 5 | — | 2(B) | — | — | 3 | 1 | — | — | — |
| Deaths | — | — | — | — | — | — | — | — | — | — |
| Pneumonia, influenzal | 509 | 27 | 1 | 4 | — | 561 | 25 | 5 | 7 | 4 |
| Deaths (from influenza)‡ | 4 | — | — | — | — | 10 | — | 1 | — | 1 |
| Pneumonia, primary | | | 191 | 31 | | | | 183 | 21 | |
| Deaths | 172 | 24 | | 3 | 9 | | 42 | | 9 | 3 |
| Polio-encephalitis, acute | 3 | — | | | | 2 | — | | | |
| Deaths | | | | | | | — | | | |
| Poliomyelitis, acute | 9 | 1 | 2 | 1 | — | 12 | 2 | — | 5 | — |
| Deaths§ | 1 | — | | | | | — | | | |
| Puerperal fever | | 2 | 11 | | — | | 2 | 9 | | — |
| Deaths | | | | | | | | | | |
| Puerperal pyrexia‖ | 99 | 9 | 12 | 2 | — | 151 | 14 | 12 | 1 | 3 |
| Deaths | | — | | | | | — | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 1,578 | 93 | 249 | 46 | 34 | 1,002 | 79 | 129 | 21 | 29 |
| Deaths† | | | 1 | — | — | — | — | — | — | — |
| Smallpox | — | — | — | — | — | 2 | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Typhoid fever | 8 | 1 | — | 3 | — | 6 | — | 2 | 3 | — |
| Deaths | — | — | — | — | — | 1 | — | — | — | — |
| Typhus fever | — | — | — | — | — | — | — | — | — | — |
| Deaths | | | | — | — | | | | — | — |
| Whooping-cough* | 3,110 | 221 | 34 | 50 | 15 | 2,222 | 300 | 225 | 40 | 12 |
| Deaths | 16 | — | — | 1 | 1 | 15 | 2 | 3 | 4 | 2 |
| Deaths (0–1 year) | 274 | 21 | 51 | 16 | 14 | 437 | 61 | 92 | 41 | 21 |
| Infant mortality rate (per 1,000 live births) | | | | | | | | | | |
| Deaths (excluding still-births) | 4,290 | 639 | 629 | 175 | 137 | 4,769 | 742 | 646 | 235 | 138 |
| Annual death rate (per 1,000 persons living) | | | 12·7 | 10·9 | | | | 13·4 | 14·8 | |
| Live births | 8,307 | 1292 | 1055 | 467 | 254 | 10,106 | 1546 | 1242 | 574 | 301 |
| Annual rate per 1,000 persons living | | | 21·3 | 29·2 | | | | 25·0 | 36·2 | |
| Stillbirths | 237 | 29 | 27 | | | 263 | 31 | 33 | | |
| Rate per 1,000 total births (including stillborn) | | | 25 | | | | | | | |

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* the only fluctuations in the trends of infectious diseases were decreases in the incidence of whooping-cough 574 and acute pneumonia 37 and an increase in the notifications of scarlet fever 40.

A fall in the number of notifications of whooping-cough occurred throughout the country; the largest decreases were Yorkshire West Riding 89 and Warwickshire 72. Although the total for measles remained practically unchanged there were considerable local variations in incidence; the rises included Middlesex 146, Kent 69, Denbigh 67, and the largest decreases were London 165, Surrey 142, Hertfordshire 74.

A rise of 16 in Lancashire provided the chief feature of the returns of diphtheria. Only small variations occurred in the incidence of scarlet fever; the largest were a decrease of 34 in Yorkshire West Riding and a rise of 28 in Lancashire. An increase of 24 in the notifications of acute pneumonia in Durham was the only fluctuation of any size in the local incidence of this disease.

A fresh outbreak of dysentery, involving 10 persons, was reported for Bedfordshire, Luton M.B. The other large returns of dysentery were London 28, Lancashire 27, and Yorkshire West Riding 12. Of the 9 cases of poliomyelitis, 3 were notified in Manchester C.B.

In *Scotland* infectious diseases were slightly less prevalent during the week; the decreases included measles 24, scarlet fever 10, acute primary pneumonia 10, and dysentery 8. No disease showed an increase in incidence. The largest returns for dysentery were those of the cities of Glasgow 28 and of Edinburgh 11.

In *Eire* only small changes occurred in the trends of infectious diseases. An outbreak of measles affecting 22 persons was notified from Wexford U.D.

In *Northern Ireland* the chief feature of the returns was an increase of 28 in the notifications of measles in Belfast C.B.

### Week Ending May 15

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,675, whooping-cough 3,117, diphtheria 153, measles 11,879, acute pneumonia 611, cerebrospinal fever 36, acute poliomyelitis 19, dysentery 111, paratyphoid 7, and typhoid 6.

# Medical News

### Assistant Secretary for B.M.A.

The Council of the B.M.A. is advertising in this issue of the *Journal* (p. 13) for an Assistant Secretary. He will work at first at Headquarters, but may later be transferred to a regional office. The salary is £1,250 a year, rising to £1,875. Medical practitioners, including those serving with the Forces, are invited to apply.

### Recruitment and Training of Nurses

The Medical Women's Federation has submitted to the Minister of Health a memorandum on the Report of the Working Party on the Recruitment and Training of Nurses. The Federation emphasizes that the craft of bedside nursing should be revived: nursing should be a relationship not unlike that between mother and child. It doubts whether the two years' course suggested by the Working Party is sufficiently long in which to train nurses, and it would like to see experiments made on methods of training nurses to think along social and preventive lines. The present training is overloaded with theory. The Federation considers also that the Working Party's criteria of selection make too heavy intellectual demands on girls who may not be clever but who have a natural aptitude for bedside nursing; their rejection would be a serious loss to the sick of this country. The present examinations are much too difficult and the standard of marking too low. The Federation proposes an intermediate grade of "hospital nurse" for those who have successfully completed two years' training at the bedside but who are not accepted for the senior course leading to State registration.

### Chair of Child Health at Belfast

An endowment of £60,000 has recently been received by the Queen's University of Belfast in order to found a chair and department of child health at the University. This contribution to the teaching and improvement of paediatrics in the Province has been made equally by the Government of Northern Ireland and by the Nuffield Provincial Hospitals Trust through the Northern Ireland Regional Hospitals Council.

### Ice-cream Control

From Nov. 1 the manufacture of ice-cream in Scotland will be controlled by Regulation. It will be unlawful to make, store, or sell ice-cream except on premises licensed by the local authority; vehicles selling it must also be registered. Boarding houses, clubs, hotels, and inns are exempt from registration, as also are restaurants where ice-cream is sold only as part of a meal and theatres and cinemas where it is not made on the premises. The local authority must be satisfied about the cleanliness of the staff and the suitability of the equipment in the factories or shops concerned.

### Scholarship for Nurses

The King Edward's Hospital Fund for London is offering under the aegis of the National Florence Nightingale Memorial Committee a £350 scholarship to trained nurses on the staff of hospitals in the Fund's area or returning to such posts. The scholarship is for one of the courses arranged by the Florence Nightingale International Foundation, which may be taken in different branches of nursing and in various countries. Candidates should have had a general education to matriculation standard and several years' experience in general nursing after State registration. Application forms, which may be sent in up till June 14, may be obtained from the Secretary, Nursing Recruitment Service (King Edward's Hospital Fund), 21, Cavendish Square, London, W.1.

### Rebuilding St. Thomas's Hospital

St. Thomas's Hospital plans eventually to have nearly 1,000 beds, in accordance with the Goodenough Committee's recommendations. The Secretary's report was presented recently to the Court of Governors and outlined the schemes for reconstruction. A new medical school and students' accommodation will be grouped with the hospital and new accommodation for nurses and staff will also be provided.

### American Association of Plastic Surgeons

Prof. T. Pomfret Kilner, President of the British Association of Plastic Surgeons, has accepted an invitation to attend the annual meeting of the American Association of Plastic Surgeons in Boston in June. He will take the opportunity of visiting other centres.

### Egyptian Ophthalmologist's Visit

Dr. Mahmoud Azmy el Kattan Bey, Professor of Ophthalmology and Dean of the Faculty of Medicine in Demerdashe Hospital, Cairo, who was a medical student in Britain from 1921 to 1923, is now studying undergraduate and postgraduate teaching in British hospitals at the invitation of the British Council. He will return to Cairo on June 14.

## COMING EVENTS

### The Nation's Nurses

A conference on "The Nation's Nurses" will be held at the Royal College of Nursing, Henrietta Place, Cavendish Square, London, W., on Monday, Tuesday, and Wednesday, May 31 and June 1 and 2, when there will be discussions on modern planning, equipment, and methods designed to improve the service to the patients. The conference will open on May 31, at 10.15 a.m., with an address by the chairman, Mr. Harold Hunter, deputy director of the Bureau of Current Affairs, and on June 2, at 2.45 p.m., the Minister of Health, the Rt. Hon. Aneurin Bevan, will deliver an address. In addition to members of the college, members and representatives of many of the regional hospital boards will attend the conference, admission to which is by programme, obtainable from the general secretary of the college at the above address.

### Safer Motherhood

A public meeting and brains trust on "Safer Motherhood," arranged under the auspices of the Married Women's Association, the National Birthday Trust Fund, and the National Federation of Women's Institutes, will be held at Caxton Hall, Westminster, London, S.W., on Tuesday, June 8, at 7 p.m. The speaker will be Sir Eardley Holland,, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G., and the question master Dr. Charles Hill, Secretary of the British Medical Association. The brains trust will comprise Sir Eardley Holland, Miss Josephine Barnes, D.M., F.R.C.S., Lady Rhys-Williams, D.B.E., Miss G. B. Carter, B.Sc., S.R.N., S.C.M., and Dr. Geoffrey S. W. Organe, D.A. The chair will be taken by Lady Helen Nutting, chairman of the Married Women's Association. A senior medical officer will be present to represent the Minister of Health. Tickets of admission may be obtained from the meeting secretary, Safer Motherhood Committee, 57, Lower Belgrave Street, London, S.W.1.

### Rheumatism Conference

The Second Scientific Conference on "Le Rhumatisme Chronique Dégénératif" at Aix-les-Bains will be held on June 24–27. Particulars may be obtained from Dr. Gerbay, 7, Square Alfred-Boucher, Aix-les-Bains.

### Medical Superintendents' Society

The annual general meeting of the Medical Superintendents' Society will be held at the Royal Hospital for Sick Children, Glasgow, on Thursday, June 3, at 10.30 a.m., when Dr. H. Stanley Banks will be installed as president. The annual dinner of the society will be held at the Central Station Hotel, Glasgow, on Friday, June 4, at 7.30 p.m., when the guest of honour will be the Rt. Hon. Walter E. Elliot, M.P.

### Empire Rheumatism Council

A summer week-end course, arranged by the Empire Rheumatism Council, Tavistock House (N), Tavistock Square, London, W.C., will be held at the Apothecaries' Hall, Black Friars' Lane, Queen Victoria Street, London, E.C., on Saturday and Sunday, June 12 and 13, with the following programme: June 12, 10 a.m., "Rheumatism—A Clinical Survey," by Prof. Henry Cohen; 11.15 a.m., "Gout," by Dr. George Graham; 2 p.m., "Neuritis," by Dr. Ernest Fletcher; 3 p.m., "Fibrositis," by Dr. W. S. C. Copeman; 4.30 p.m., "Spondylitis," by Dr. W. S. Tegner. June 13, 10 a.m., "Physical Methods in the Treatment of the Rheumatic Diseases," by Dr. F. S. Cooksey; 11.15 a.m., "Orthopaedic Aspects of the Rheumatic Diseases," by Mr. J. C. R. Hindenach. The fee for the course is £1 1s., and entries, limited to 100, must be received with remittance, at least one week before, by the General Secretary of the Council at the above address.

### Ross Jubilee, 1898–1948

A reception, arranged by the Ross Institute of Tropical Hygiene, will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., on Monday, July 5, at 5 p.m., to celebrate the discovery of the route of transmission of malaria by Sir Ronald Ross in July, 1898. At 6.30 p.m., in the lecture theatre, Dr. John Masefield, the Poet Laureate, will speak of "Ronald Ross." An exhibit showing the progress made in the control of malaria over a period of fifty years will be on view in the museum from 5 p.m. to 8 p.m., and will be open to the public from 11 a.m. to 3 p.m., from July 6 to 9 inclusive. Refreshments will be served in the library, the senior common room, and in a marquee over the lecture theatre from 5 p.m. to 8 p.m.

### Oxford Graduates' Medical Club

The summer dinner of the Oxford Graduates' Medical Club will be held at Christ Church, Oxford, on Friday, July 16, at 7 for 7.30 p.m., when the chair will be taken by Prof. A. W. M. Ellis, D.M., F.R.C.P. All men who are Oxford graduates, studying or practising medicine, are members of the club and it is hoped that there will be a good attendance at this, the first post-war dinner. Accommodation is restricted, making it impossible to allow guests on this occasion. The joint honorary secretary of the club, Mr. E. A. Crook, M.Ch., F.R.C.S. (149, Harley Street, London, W.1), asks those who intend to be present at the dinner to let him know by July 1 at the latest; he would also be glad of the permanent addresses of all members. The cost of the dinner is 30s., inclusive of wine, and day dress will be worn.

### International Congress of Physical Education, Recreation, and Rehabilitation

The organizing committee of the International Congress on Physical Education, Recreation, and Rehabilitation, which is to be held in London from July 23–26 under the auspices of the Ministry of Education, is now prepared to consider applications from doctors and educationists who wish to attend in their personal capacity. The aim of the congress is to give some indication of the steps being taken in Britain to develop physical education in schools and colleges, physical recreation in after-school life, and rehabilitation in industry and in the Services, and to provide an opportunity for a world-wide exchange of information and ideas about these matters. The Minister of Education has kindly consented to open the congress, and the closing address will be given by Prof. Arthur Newell, well known for his work in the field of international relations. Some fifty foreign countries, Dominions, and Colonies have already decided to send delegates, and invitations have also been extended to a number of British organizations concerned with education, medicine, and social welfare. The fee for the whole congress is £3, but in certain circumstances it may be possible to accept applications for attendance at one session (morning or afternoon) on payment of 10s. As accommodation is limited, those interested are advised to write as soon as possible to the general secretary of the Congress, 6, Bedford Square, London, W.C.1, who will be glad to supply a draft programme and the application form which should be completed by those who wish to attend.

### Anthropology and Ethnology

The 3rd Session of the International Congress of Anthropological and Ethnological Sciences will be held in Brussels and Tervuren on Aug. 15–23, under the Presidency of Prof. E. De Jonghe. Full particulars may be obtained from the Secretary, Frans M. Olbrechts, Musée du Congo Belge, Tervuren, Belgium.

## SOCIETIES AND LECTURES

### Monday

EDINBURGH UNIVERSITY: PHYSIOLOGY CLASSROOM.—May 31, 5 p.m. "*John Hunter: Surgeon and Naturalist*," by Dr. Douglas Guthrie.

UNIVERSITY COLLEGE LONDON.—At Anatomy Theatre, Gower Street, W.C., May 31, 5.30 p.m. Shearman Lecture: "*The Origin and Nature of Scientific Thought*," by Mr. E. Schrödinger, Ph.D., D.Sc.

### Tuesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—June 1, 5 p.m. "*Varicose Eczema, Ulceration, etc.*," by Mr. A. K. Monro.

### Thursday

FACULTY OF HOMOEOPATHY.—At London Homoeopathic Hospital, Great Ormond Street, London, W.C., June 3, 5 p.m. "*Notes on Worm Infestation in Children*," by Dr. Elizabeth M. J. Paterson.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—June 3, 5 p.m. "*Eczema*," by Dr. G. B. Mitchell-Heggs.

SOCIETY AND CLINIC FOR CONSTRUCTIVE BIRTH CONTROL AND RACIAL PROGRESS, 106, Whitfield Street, Tottenham Court Road, London, W.—June 3, 2.30 p.m. *Practical demonstration of contraceptive methods*, by Drs. Marie Stopes and Beddow Bayly.

SOCIETY OF APOTHECARIES OF LONDON, Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C., June 3, 5 p.m. "*The Pharmacology of Heart Failure*." Joseph Strickland Goodall Memorial Lecture by Prof. John McMichael, M.D., F.R.C.P.Ed.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF PHARMACOLOGY.—At Physiology Theatre, Gower Street, London, W.C., June 3, 5.15 p.m. "*The Action of Drugs on Mitosis*," by Mr. J. F. Danielli, Ph.D., D.Sc.

## APPOINTMENTS

Dr. Manuel Suarez has been appointed Professor of Paediatrics in the Faculty of Medicine at San Diego de Compostella, Spain.

Dr. Cluni Lal Katiel has been appointed Director-General of the Employees State Health Insurance Corporation of the Dominion of India.

Dr. Katiel came to England and entered general practice at Finsbury 22 years ago and has played an active part in the medical services and the public health organization of the borough. He was mayor for 1938–9 and was raised to the Aldermanic Bench in 1945. He was elected to the L.C.C. as a representative of the borough at the last elections. In his new appointment he will organize a health insurance scheme which will include a comprehensive medical service.

ORCHARD, W. E., M.D., D.P.H., Deputy Senior Administrative Medical Officer, Sheffield Regional Hospital Board.

## BIRTHS, MARRIAGES, AND DEATHS

### BIRTHS

**Bourke.**—On April 29, 1948, to Joan, wife of E. E. Bourke, F.R.C.S., 56, Harley Street, London, W., a son.

**Brash.**—On May 15, 1948, at Stobhill Hospital, Glasgow, to Patricia (née Parker), wife of David Brash, M.B., Ch.B., D.M.R., a son—David Laurence.

**Powell-Tuck.**—On May 20, 1948, at The Crossways, Acocks Green, Birmingham, to Catherine (née Kirby), wife of Dr. G. A. Powell-Tuck, a son.

**Wilkinson.**—On May 8, 1948, at Watford, to Kathleen, wife of Dr. R. H. Wilkinson, a son—Andrew Richard.

### MARRIAGE

**Mather—Buchanan.**—On April 21, 1948, at Edinburgh, John Stewart Mather, M.B., Ch.B., of Bradford, to Maud Lovett Buchanan, M.B., Ch.B., of Edinburgh.

### DEATHS

**Blacker.**—On May 21, 1948, at Oak Hill Cottage, Frensham, Surrey, Sir George Francis Blacker, C.B.E., M.D., F.R.C.P., F.R.C.S.

**Blackett.**—On May 13, 1948, in London, Edward Joseph Blackett, O.B.E., M.R.C.S., L.R.C.P., of 20, Kendal Street, London, W., aged 77.

**Chambers.**—On May 19, 1948, at Trefusis, Yealmpton, S. Devon, Gerald Chambers, M.B., Ch.B., D.M.R.E.

**Conford.**—On May 15, 1948, at 20, Bath Road, Felixstowe, George James Conford, M.D., aged 78.

**Fraser.**—Recently in South Africa, James Fraser, M.B., Ch.B.Glas.

**Gwynne-Hughes.**—On Feb. 8, 1948, Devereux Gwynne-Hughes, F.R.C.S.Ed., of New South Wales, Australia, aged 87.

**Hall.**—On May 17, 1948, Peter Sinclair Hall, M.B., B.Chir., of Sparrows, Searle Road, Farnham, aged 28.

**Linington.**—On May 18, 1948, at The Acorn, Swain Road, Tenterden, Kent, William West Linington, F.R.C.S., aged 76.

**MacGilchrist.**—On May 14, 1948, at 9, Mandeville Gardens, Ballygunge, Calcutta, India, Archibald Currie MacGilchrist, M.D.Ed., D.Sc., M.R.C.P., Colonel, I.M.S., retired.

**MacMyn.**—On May 13, 1948, at Blair House, Kirkcudbright, John MacMyn, M.D., C.M.Ed., aged 85.

**Metcalfe.**—Suddenly, at Moorside North, Newcastle, Stanley Dunn Metcalfe, M.B., B.S., aged 63.

**Miller.**—On May 17, 1948, at Hastings, Arthur William Miller, M.B., C.M.Glas., aged 80.

**Muldavin.**—On April 24, 1948, Léon Feinson Muldavin, M.D., of New York, aged 37.

**Ollerenshaw.**—On May 19, 1948, suddenly, Robert Ollerenshaw, M.D., F.R.C.S., of Broome House, Didsbury, Manchester.

**Pole.**—On May 21, 1948, at 13, Cameron Park, Edinburgh, Laurence William Pole, M.B., Ch.B.Ed., D.P.H., aged 72.

**Renton.**—On May 19, 1948, Maurice Waugh Renton, M.D., D.P.H., of the Bridge House, Dartford, Kent.

**Taylor-Young.**—On May 20, 1948, at a Salisbury Nursing Home, Hugh Corbett Taylor-Young, O.B.E., M.D., F.R.F.P.S.Glas., formerly of Sydney, N.S.W.

**Watson.**—During August, 1947, Edward Clifford Watson, D.S.O., M.R.C.S., L.R.C.P., Captain, R.N., retired.

**Watts.**—On May 14, 1948, at St Mary's Hospital, London, W., Brian Watts, D.S.O., M.D.Brux., Colonel, R.A.M.C., retired.

# Any Questions?

*Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.*

### Legal Ownership of X-ray Films

**Q.**—*Who is the legal owner of x-ray films? Do they remain the property of the radiologist? How should I respond to a request from the patient of a colleague of mine for copies of films which are wanted to help him in a legal action against another doctor?*

**A.**—The question, "Who is the legal owner of *x*-ray films?" has never been finally settled. It is discussed at length, with many illustrative case references, by D. Harcourt Kitchin in his *Legal Problems in Medical Practice* (1936, pp. 127–30), and it was also the subject of an article which appeared in the *Journal* of Jan. 13, 1934 (p. 80). It is generally agreed from the medical point of view that the films belong to the radiologist; they are an indispensable part of the material on which he founds his opinion. If the patient pays him a fee, this is in respect of his opinion, and not in consideration of the handing over of the films. If the films are so handed over, and the radiologist is afterwards sued for giving a negligent opinion, he would be unable to defend his interpretation of the films unless they were handed back to him. The German Röntgen Society issued a declaration in 1912 to the effect that it considered that all films, prints, diagrams, tracings, etc., prepared by the radiologist were to be regarded as his property, just as the histological preparations of a consulting pathologist remain his property, on which he bases his opinion of the nature of the material submitted to him for examination. The practitioner who refers the case to the radiologist is entitled, as a matter of courtesy, to inspect the films.

There are several decisions in American courts (quoted by Kitchin) which go to show that the *x*-ray films are the property of the radiologist or of the hospital in which such an examination has been made, and that it is just as necessary that the film should be retained by the practitioner in charge of the case as that he should preserve the temperature charts and other case records. In determining any question of ownership of the film the court has regard to the nature of the contract, and will not, generally speaking, infer without express evidence that there is any contract to hand over the films to the patient, who pays his fees for expert advice and not for the documents or other material on which that advice is based.

With regard to the second part of the question, this does not make quite clear the circumstances of the case; assuming that the questioner took the films in the course of the examination of the patient, who paid a fee for this service, the patient is entitled only to a copy of the radiologist's opinion; there would be no objection to the radiologist supplying copies of the films if he feels so disposed, but he is not bound to do so unless an order for disclosure is made by the court.

### Stilboestrol for Acne

**Q.**—*Does stilboestrol have any effect on the endocrine system of the male? It is often successful in alleviating acne vulgaris in the female. Would it be suitable for a male adolescent suffering from the same complaint?*

**A.**—Stilboestrol acts in the male by inhibiting the gonadotrophic function of the pituitary gland, thus causing involution of the testicle and diminution or cessation of the secretion of testosterone. Since acne vulgaris in the male is believed to be linked with the secretion of testosterone, and since testosterone therapy, both in the male and the female, may produce acne, it might be expected that stilboestrol in sufficient doses would alleviate acne in the male. Clearly, however, it is not a measure that could be continued for any length of time in the male in the doses required. As to smaller doses, there is less definite evidence of some direct counteraction of testosterone by oestrogens. Of course it is known that acne may occur at puberty and adolescence in females as well as in males, and

sometimes in the treatment of amenorrhoea by stilboestrol acne is produced. On the whole the treatment of acne in the male by stilboestrol is disappointing, but some good results have been recorded.

### Disseminated Sclerosis and Swayback in Sheep

**Q.**—*Has the discovery of the association of disseminated sclerosis with swayback in sheep, described in the Journal of Sept. 20, 1947 (p. 460), led to any modification in treatment? Does any treatment influence the course of the disease?*

**A.**—The discovery of the association of disseminated sclerosis with swayback in sheep has not yet led to any rational form of curative treatment of the disease. The situation is, briefly, that swayback is a disease which occurs in newborn lambs, the animals becoming progressively ataxic and dying within a short while. The condition arises only in offspring of ewes which have been fed on a copper-deficient diet, and the addition of copper to that diet will greatly reduce the incidence of the disease.

It is clear from the evidence, however, that a maternal copper deficiency is not the only cause, and the fact that several workers developed disseminated sclerosis suggested that there may also be an infective agent responsible in the predisposed animals. Much more work will be needed before these observations can be applied to the prevention and cure of the disease in man. There is no known method of treatment that will arrest disseminated sclerosis but much can be done to help the patient. First, rest during the acute exacerbation seems to reduce the severity to some extent; secondly, re-education with Frankel's exercises reduces the residual disorder of function; and, lastly, the judicious use of a placebo, together with superficial psychotherapy, maintains the patient's hopeful attitude throughout most of the illness.

### Convalescent Measles Serum

**Q.**—*Is there any method of ensuring that convalescent measles serum will not give rise to homologous serum jaundice?*

**A.**—One of the dangers of using convalescent measles serum in children is the possibility of causing homologous serum jaundice. Cases of this condition due to the use of pooled convalescent measles serum appeared in 1937 and are referred to by McNalty (Report of the Chief Medical Officer, Ministry of Health, 1938). At present no way is known of destroying the causal virus without also destroying the measles immune bodies. Other less serious risks were discussed in a recent question and answer (May 15, p. 963).

### Administration of Oxygen

**Q.**—*Under what circumstances can oxygen be bubbled through water before administration?*

**A.**—Oxygen may always be bubbled through water before inhalation. It was formerly thought that this method of administration caused less dryness of the nasopharynx, and most of the older flowmeters were constructed on a principle embodying the passage of the gas through water. It is seldom done at the present time, and patients do not complain of dryness of the nasopharynx. The older water flowmeters were inaccurate, and when an adequate volume of oxygen per minute was administered such commotion resulted in the water as to make the method impracticable.

### Treatment of Orbital Gumma

**Q.**—*For the treatment of a man aged 51 with an orbital gumma (inner canthus of eye), and Wassermann reaction and Kahn test strongly positive, I have been advised that pot. iod. with hydrarg. perchlor. is all that is necessary, provided that it is taken for at least two years. Is any more active treatment desirable or necessary?*

**A.**—The answer to the question is in the affirmative. The treatment advised might have been considered suitable forty years ago, but there seems no adequate reason to deny the patient the benefit of modern powerful remedies. It might be well to obtain the opinion of an ophthalmologist on whether too rapid resolution of the lesion would have any harmful effects, in which case preliminary treatment with iodides, bismuth, or very small doses of penicillin (e.g., 500 units) would be advisable. Otherwise the patient should receive a course of at least 6,000,000 units of penicillin, followed by a course of neoarsphenamine (5–6 g.) and bismuth (2–2.5 g.) over a period of about nine weeks. Thereafter, in view of the age of the patient, it might be wise to rely mainly on bismuth, but several courses should be given at suitable intervals as an insurance against further damage, though it is likely that the serum reactions will be difficult to reverse; too much importance should not be attached to the achievement of a negative serum reaction.

### Distance between Cervix Uteri and Perineum

**Q.**—*Has anyone else measured the difference in the distance between the cervix and the perineum in the upright position, in the lithotomy position, and in the squatting position? I have found a difference of 1/2 in. (1.25 cm.) between the first and third positions, and probably it is greater in the pregnant woman.*

**A.**—Without searching the literature the writer does not know of any published work dealing with accurate measurements of the variations in distance between the cervix and perineum in the same woman. The supports of the uterus allow it a good deal of movement, so its position varies with the intra-abdominal pressure, the fullness of the bladder and rectum, and with posture. The degree of vertical movement also varies considerably in different individuals according to the laxity of the supports, the length of the vagina, etc. These are everyday clinical observations that are well known, and the effect of posture is recognized in practice by the use of the genu-pectoral and other special positions for gynaecological examinations and operations. It is to be expected that the squatting position will result in all the pelvic organs being crowded lower down, and that the distance between cervix and perineum will be correspondingly decreased.

### Pregnancy and Psoriasis

**Q.**—*What is the effect of pregnancy on psoriasis? Would injection of the hormones present in pregnancy be likely to clear up this very intractable complaint? I have a patient aged 27 who has had psoriasis since the age of 11. She has had three children, and on each occasion the rash began to recede about a month after conception and cleared up until one to two months after delivery, when it started to return.*

**A.**—As with most other constitutional reactions, the effect of psychological, hormonal, and other disturbances in relation to psoriasis is well recognized. The onset during pubertal or menopausal years is one evidence of this, and it is common for pregnancy to have a beneficial effect on the course of psoriasis, though sometimes the reverse is true. The administration of hormones based upon this experience has often been tried but without any consistent results.

## NOTES AND COMMENTS

**Phosphaturia.**—Dr. D. O'DONOVAN (Durban, South Africa) writes: With reference to the question and answer under the heading "Phosphaturia and Oxaluria" ("Any Questions?" Feb. 28, p. 426), from personal experience and after an extended trial of the usual recommended means I have found that three to four "enseals" (Lilly) of ammonium chloride, 7½ gr. (0.5 g.), taken daily in divided doses will prevent phosphaturia and will allow the patient to lead a normal comfortable life. I have taken these tablets for several years without any ill effects.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
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